627.13
N224c

The Chicago Water Diversion Controversy

HERBERT H. NAUJOKS

ILLINOIS HISTORICAL SURVEY

Digitized by the Internet Archive
in 2012 with funding from
University of Illinois Urbana-Champaign

http://www.archive.org/details/chicagowaterdive00nauj

S15-59

The Chicago Water Diversion Controversy

By

HERBERT H. NAUJOKS

General Counsel for the Great Lakes Harbor Association

A reprint of an article that appeared in Volume 30, Numbers 3 and 4, and Volume 31, Number 1 of the Marquette Law Review, published by the Marquette University Law School, 1103 West Wisconsin Avenue, Milwaukee, Wisconsin.

(This pamphlet is made available through courtesy of the Great Lakes Harbor Association, City Hall, Milwaukee, Wisconsin.)

627.13
N224c

MARQUETTE LAW REVIEW

Vol. 30 DECEMBER, 1946 No. 3

THE CHICAGO WATER DIVERSION CONTROVERSY*

HERBERT H. NAUJOKS

This article presents a study of the legal and factual problems relating to the Chicago Water Diversion Controversy. It offers an account of the history and background of this litigation, and describes the present status of the problem. It touches upon the legal issues involved, as well as the physical features of the Great Lakes-St. Lawrence system, the Illinois Waterway, the Chicago Drainage Canal, the details concerning sewage disposal in the Chicago area, and related matters. Finally, certain conclusions are drawn respecting a permanent disposition of this important controversy.

PART ONE: HISTORY AND PRESENT STATUS OF THE CHICAGO DIVERSION CONTROVERSY

(a) *The Chicago Diversion Problem dates back to early Chicago.*

The so-called diversion controversy arose out of the circumstance that between the years 1892 and 1900 the City of Chicago and its suburbs carried out a plan of disposing of the sewage of the Chicago metropolitan area by cutting a canal across the low continental divide which lies about ten miles west of Lake Michigan and discharging the sewage of that area into the Mississippi watershed by way of the Des Plaines and Illinois Rivers. To understand rightly this problem one should be familiar with the natural geography and history of the Chicago and the Great Lakes area.

The inception and development of the Chicago Drainage Canal plan of sewage disposal and protection of water supply really dates back to early Chicago. Even before Illinois was admitted to statehood in 1818, the water routes connecting Lake Michigan and the Mississippi River were the subject of Federal treaties with the Northwest and

*This is the first in a series of at least two articles on this subject. The next will appear in the February issue. In this first article Mr. Naujoks presents a chronological-historical study of a long and interesting controversy in which legal problems have been both novel and endless, and outlines the legal landmarks from early beginnings to the present day against a factual background of enveloping complexity. Subsequent parts of the treatise will deal directly with the legal problems involved.—ED.

the Ottowa Indians.[1] At this time the area of the proposed canal contained two short sluggish streams, one flowing into Lake Michigan and the other into the Mississippi watershed. Between them was a marshy lake. The site of the old Illinois and Michigan canal (which had no direct relation to the present canal) is an ancient portage. It was recognized and used from the earliest discoveries in America as the connecting link between the Atlantic Seaboard via the St. Lawrence River and the Great Lakes to the Gulf of Mexico via the Illinois and the Mississippi Rivers. This portage was used by Indians for centuries as a strategic route for war canoes during tribal conflicts and for the loaded craft of the Indian traders and hunters in time of peace. In a state of nature, before the advent of the white man, it was ample for the comparatively small traffic of that early day. With the coming of the Europeans, this portage site became the gateway for the discovery, conquest and colonization of our great inland empire. It was to this spot that Pere Marquette, the great Jesuit Missionary, came in 1673. Marquette's frail boats were piloted by fierce Indian navigators who were familiar with this water route. It was to this place that the expedition of the intrepid LaSalle marched under command of the Loyal Tonti. The great LaSalle himself twice took the same path.

Following close on the heels of discovery and conquest, trade came in the form of gaunt and bearded adventurers and frontiersmen. It was then that the power and prestige of the red navigators from the nearby forests and plains began to wane under the civilizing influence of the missionaries and settlers. These newcomers quickly became familiar with the beaten paths and natural routes linking the great Atlantic Seacoast with the busy cities and marts along the Gulf Coast. Many decades later, after the American colonies had secured their independence from their Mother country, the United States Congress recognized the importance of this water route as affecting the general welfare of the country as a whole.

In 1818, an amendment to the Act enabling Illinois to organize as a state set aside a narrow strip of land for a proposed canal route to link Chicago by water with the Illinois River[2] and the Mississippi Valley.

Congress, by the Act of March 30, 1822[3] authorized the State of Illinois to survey and mark through the public lands of the United States a route of a canal connecting the Illinois River with Lake Michigan, and set aside ninety feet of land on either side of the proposed canal in the aid of such scheme. A further grant of land

1 Treaty of Grenville, 1795, and Treaty of 1816.
2. 32 Annals of Congress, p. 1677.

was made in the year 1827[4] consisting of "one-half of five sections in width on each side of said canal" to the State of Illinois "for the purpose of aiding said state in opening a canal to unite the waters of the Illinois River with those of Lake Michigan." In 1836, Illinois enacted legislation[5] providing for the construction of the canal which was known as the Illinois and Michigan Canal. It was finally completed in 1848, a part of it substantially on the route of the present Chicago Drainage Canal. This Illinois and Michigan Canal crossed the Continental Divide between the Chicago and Des Plaines Rivers on a summit level eight feet above the Lake and then continued on to LaSalle, Illinois, where it entered the Illinois River.[6] The funds provided for the canal proved inadequate for the original engineers' plan and the purpose of the Act to provide a depth suffiicient to take waters from Lake Michigan by gravity. It became necessary to supply the summit of the canal with water from the Chicago River by means of dams and pumps. At first only a small amount of water, enough to supply the needs of navigation, was pumped into the canal. However, this amount of water proved insufficient for all needs inasmuch as the City of Chicago, with a population of 80,000, constructed its first sewage system in 1856. This system discharged into the Chicago River. The City's sole source of water supply was Lake Michigan. The sewage deposited in the river filled it up and in times of heavy flood this filth was washed out into the lake and contaminated the water supply. Before the year 1865 the Chicago River had become so offensive from receiving the sewage of the rapidly growing city that for its immediate relief the authorities agreed to pump water from the Chicago River in excess of the needs of navigation. This expedient was not successful and other measures were considered. In 1866 Congress appropriated funds[7] for a survey of the project of enlarging the canal, and in 1867 the Chief of Engineers of the United States Army reported favorably thereon. In 1871 the State of Illinois enlarged this canal on the original plan.[8]

By the year 1872 the summit level of the Illinois and Michigan Canal was lowered with the hope that this would result in a permanent flow of lake water through the south branch of the Chicago River

3. 3 U.S.Stat. at L.659, chapter 14.
4. 4 U.S.Stat. at L. 234, chapter 451.
5. Session Laws of Illinois for 1836, p. 98.
6. This canal was to be supplied "with water from Lake Michigan and such other sources as the canal commissioners may think proper." It was to be constructed in the manner "best "calculated to promote the permanent interest of the country reserving 90 feet on each side of said canal to enlarge its capacity" Session Laws of Illinois for 1836, p. 98, sec. 16.
7. 14 U.S.Stat. at L. 7.
8. This work was done pursuant to an enabling act of the Illinois Legislature of Feb. 16, 1865.

sufficient in amount to keep that stream unpolluted. However, this plan did not work and the Canal again became badly contaminated. Then, during the years 1880 to 1889, a continuance of this nuisance along the Canal resulted in the arousing of public opinion in favor of better drainage and water supply.

(b) *Disposition of the sewage of the Chicago area the main reason for the construction of the present Chicago Drainage Canal.*

Many investigations were undertaken and numerous reports filed. In 1887 the Drainage and Water Supply Commission was organized, consisting of Rudolph Hering, Samuel G. Arlingstall, and Benezette Williams, who had studied three methods of sewage disposal and who recommended as the most economical the discharge of the sewage into the Des Plaines River through a canal across the Continental Divide. The three methods of solving the problem of disposal of the sewage of Chicago which were considered by the Commission were:[9] First, the discharge of sewage into Lake Michigan at one end of the city and the taking of the water supply at the other extreme end of the city; Second, the disposal of sewage on land by intermittent filtration over a vast sewage farm (as large as 15,000 acres); Third, the discharge of sewage into the Des Plaines River by means of the canal and resultant disposal by dilution. Disposal of sewage on land as practiced in many European cities was rejected as impracticable because of its cost. The disposal of sewage into Lake Michigan was reported unfavorably as not too practical, so the legislature authorized the construction of the Chicago Drainage Canal as the easiest and most economical solution to the problem. The purification method (now acknowledged to be the best method of sewage disposal) was not given much consideration by the Commission.

By Act of May 29, 1889, the Illinois legislature authorized the creation of sanitary districts to provide for drainage, with power to construct channels, improve navigable and other waterways, and for this purpose to condemn property.[10] This law was entitled "An Act to create Sanitary Districts and to Remove obstructions in the Illinois and Des Plaines Rivers." Pursuant to such authority, the Sanitary District of Chicago, a quasi-municipal corporation, was organized. The Act of 1889 provided for the construction of the Canal much in its present form. It contemplated abstraction of the waters of Lake Michigan through the Canal into the Illinois River and thence

9. Memorandum issues by Trustees of the Sanitary District of Chicago dated December, 1932, p. 4. The main reason for adopting the dilution method instead of the purification method of disposing of the sewage of Chicago was to save expense. See pp. 1800-1820, Part 2, Rivers and Harbors Committee Hearing of April and May, 1924.
10. Illinois Laws of 1889, p. 186.

down the Mississippi River. The Canal was to be operated with a diversion from Lake Michigan of an amount of water up to 10,000 cubic feet per second.

In 1890, when organization was complete, the Sanitary District of Chicago embraced an area of 185 square miles. By later statutes the District was enlarged so that it now embraces approximately 442 square miles, extending from the Illinois state line on the southeast to the northern boundary of Cook County on the north, with about 34 miles of frontage on Lake Michigan, including within its boundaries Chicago and its suburbs, a total of sixty cities, towns and villages.

The Chicago Drainage Canal was constructed by the Sanitary District of Chicago between 1892 and January 17, 1900, when the canal was first opened. Section 23 of the original Act of 1889 provided for a canal 162 feet wide and not less than 14 feet deep with the water velocity to be not greater than three miles per hour. Section 20 of the Act makes mandatory a continuous flow of 20,000 cubic feet per minute for each 100,000 of the population within the Sanitary District. The Canal extends from the west fork of the south branch of the Chicago River near Robey Street, a point about 6 miles from the mouth of the Chicago River at Lake Michigan, to the Des Plaines River beyond Lockport, a distance of 30 miles. Since the opening of the Canal in 1900, the flow of the Chicago River has been reversed and it now flows away from Lake Michigan.

While some pretense was made that the Chicago Drainage Canal was for the purpose of creating in part a navigation route, the Canal ended in a dam without locks, below which was a non-navigable tailrace. There is a natural drop of 34 feet at Lockport. The purposes of the Canal were the disposal of sewage and also to obtain a profitable water-power. The United States Supreme Court found that those were the purposes for the diversion.[11] Both purposes required as large a diversion as possible.

In 1896 Congress appropriated money for the dredging of the Chicago River, and in that year the Sanitary District asked for a permit from the Secretary of War to enlarge the cross section of the Chicago River, stating that this was necessary to make available the artificial channel under construction since 1892. The Secretary of War granted the permit, but stated that this authority was not to be interpreted as an approval of the plans of the Sanitary District to introduce a current into the Chicago River. This authority was to expire in two years. Other permits relating to the same subject were issued by the Secretary of War in 1897, 1898 and twice in 1899. After the Canal was opened the then Secretary of War, Elihu Root, granted

11. *Wisconsin, et al* v. *Illinois, et al,* 278 U.S. 367 at p. 415 (1929).

a permit on December 5, 1901 allowing a diversion of 4167 cubic feet per second.[12]

Meanwhile, at about the time of the opening of the Canal in 1900, the State of Missouri brought an action against the State of Illinois to enjoin threatened pollution of the waters of the Mississippi through the use of the Sanitary Drainage Canal as a means of disposing of sewage of the City of Chicago. The United States Supreme Court denied, without prejudice, an injunction because it was not satisfied that the claims of Missouri as to the pollution of the waters of the Mississippi River at St. Louis and the alleged danger to public health were substantiated.[13]

The Illinois Legislature passed an Act, approved May 14, 1903,[14] which added certain territory to the Sanitary District and which authorized the Sanitary District of Chicago to construct all such dams, waterwheels and other works as should be necessary to develop and render available the power arising from the water passing through its main channel, and any auxiliary channels then in existence or thereafter to be constructed by the district. This Act also authorized the destruction of the old Illinois and Michigan Canal running from the Chicago River to the Des Plaines River.

An application to do certain work in the Calumet-Sag channel and to increase the flow from Lake Michigan through said channel was refused by the then Secretary of War, William Howard Taft, in March, 1907, and as the Sanitary District apparently decided to proceed with this work in spite of such refusal, the United States brought suit in 1908 to enjoin the construction and to prevent the increase of the flow of the waters of Lake Michigan through the Chicago Drainage Canal.

(c) *Water power profits, a dominant motive for a large diversion on the part of Illinois and the Sanitary District of Chicago.*

In 1908, separate Section 3 of the Constitution of Illinois of 1870 was amended to authorize the Illinois legislature to provide for the construction of a deep waterway or canal, from the waterpower plant of the Sanitary District of Chicago, at or near Lockport, to a point on the Illinois River at or near Utica, and for the installation and maintenance of power plants, locks, bridges, dams and appliances sufficient for the development and utilization of the waterpower of such waterway; it also being provided that all power so developed might

12. The permit of December 5, 1901, provides also that the "Sanitary District of Chicago shall be responsible for all damages inflicted upon navigation interests, by reason of the flow herein authorized."
13. Missouri v. Illinois, 180 U.S. 208 (1901); 200 U.S. 496 (1906).
14. Illinois Laws of 1905, pp. 113-117.

be leased, in part or whole, as the legislature might authorize, the rental to be subject to a revaluation every ten years and the income to be paid into the state treasury. From this time on, water power profits became a dominant motive for a large diversion.[15]

The development of this project — the so-called Illinois waterway — was undertaken and justified by Illinois upon the ground that the State of Illinois would make a profit of three million dollars a year from the use of the water diverted from Lake Michigan for water power purposes.[16] Twenty million dollars were to be expended for this purpose. No diversion of any consequence was necessary to provide a connecting navigable waterway, as distinguished from the requirements of sewage disposal, and the amount of water desired for water power, the profitableness of the water power being strictly proportional to the amount of water diverted. The large diversion of water from Lake Michigan at this time was made by the State of Illinois without the consent of any of the states bordering on the Great Lakes, in defiance of the Federal government, and in violation of the rights of a friendly foreign nation to the north, the Dominion of Canada. Temporary permits were from time to time granted by reluctant Secretaries of War solely on the plea that since the Chicago Sanitary District and Illinois had neglected or refused to install modern sewage disposal plants, enforcement of the law against impairment of the navigable capacity of the Great Lakes system, with consequent termination or substantial reduction of the diversion, would impair the health of the people of the Chicago metropolitan area.

Another application for diversion of 10,000 cubic feet per second was made by the Sanitary District of Chicago in 1913. The then Secretary of War, Henry L. Stimson, denied this application. In his written memorandum, the Secretary of War pointed out:

> "In a word, every drop of water taken out at Chicago necessarily tends to nullify costly improvements made under direct authority of Congress throughout the Great Lakes, and a withdrawal of the amount now applied for would nullify such expenditures to the amount of many millions of dollars, as well as inflict an even greater loss upon the navigation interests using such waters.
>
> "On the other hand, the demand for the diversion of this water at Chicago is based solely upon the needs of that city for sanitation. There is involved in this case no issue of conflicting claims of navigation. The Chief of Engineers reports that so far as the interests of navigation alone are concerned, even if we should eventually construct a deep waterway from the Great Lakes to the Mississippi over the route of the Sanitary

15. Report of Special Master Hughes, dated November 25, 1927, p. 65.
16. Joint Abstract of Record filed January 24, 1928, p. 120.

Canal, the maximum amount of water to be diverted from Lake Michigan need actually be not over 1,000 feet per second, or less than a quarter of the amount already being used for sanitary purposes in the Canal. This estimate is confirmed by the report of the Special Board of Engineers on the deep waterway from Lockport, Illinois, to the mouth of the Illinois River, dated January 25, 1911. It is also confirmed by the practical experience of the great Manchester Ship Canal in England. From the standpoint of navigation alone in such a waterway, too great a diversion of water would be a distinct injury rather than a benefit. It would increase the velocity of the current and increase the danger of overflow and damage to adjacent lands.

"We have therefore presented in this case claims of entirely different characters and jurisdictions — the claim of sanitation on the one side and of navigation on the other; the vital interest of a single community on the one side and the broad interest of the commerce of the Nation on the other. The discretion given to the Secretary of War under Sections 9 and 10 of the Act of 1899 is very broad, but I have very grave doubts as to whether it was intended to authorize him to grant a permit which would inflict a substantial injury upon commerce in order to benefit sanitation. The entire purpose and scope of that legislation was to make him the guardian of the commercial interests of the Nation represented in their waterways. And while he sometimes under that statute must decide that the interests of one class of transportation are less important and must yield to the conflicting interests of another class, I have considerable doubt whether it was intended to give him authority to sacrifice substantial interests of navigation to entirely different claims over which he normally has no jurisdiction.

"It is therefore quite conceivable that compliance with their sanitary needs according to this method of sanitation may eventually materially change this great natural watercourse now existing through the Lakes. The weighing of the sanitation and possibly the health of one locality over against the commerce of the rest of the Nation, and the consideration of our relations and obligations to Canada in respect to a great international waterway, are not matters of mere technical or scientific deduction. They are broad questions of national policy. They are quite different in character, for example, from the question of fixing the proper location of a pierhead line or the height or width of a drawbridge over a navigable stream — fair samples of the class of questions which come to the Secretary of War for decision under the above mentioned Act of 1899. While the researches and opinions of experts in the respective fields are necessary and useful as an assistance towards reaching a fair and proper policy, the final determination of that policy should belong, not to an administrative officer, but rather to those bodies to whom we are accustomed to entrust the making of our laws and treaties.

"* * * I have carefully examined, however, the evidence which both sides have introduced bearing upon the sanitary

needs of the city of Chicago, and my conclusion is in no way shaken. I am not persuaded that the amount of water applied for is necessary to a proper sanitation of the city of Chicago. The evidence indicates that at bottom the issue comes down to the question of cost. Other adequate systems of sewage disposal are possible and are in use throughout the world. The problem that confronts Chicago is not different in kind but simply larger and more pressing than that which confronts all of the other cities on the Great Lakes, in which nearly three millions of the people of this country are living. The urban population of those cities, like that of Chicago, is rapidly increasing, and a method of disposition of their sewage which will not injure the potable character of the water of the Lakes must sooner or later be found for them all. The evidence before me satisfies me that it would be possible in one of several ways to at least so purify the sewage of Chicago as to require very much less water for its dilution than is now required by it in its unpurified condition. A recent report of the Engineer of the Sanitary Commission (October 12, 1911) proposes eventually to use some such method but proposes to postpone its installation for a number of years to come, relying upon the present more wasteful method in the meanwhile. It is manifest that so long as the city is permitted to increase the amount of water which it may take from the Lakes, there will be a very strong temptation placed upon it to postpone a more scientific and possibly more expensive method of disposing of its sewage. This is particularly true in view of the fact that by so doing it may still further diminish its expenses by utilizing the water diverted from the Lakes for water power at Lockport. But it must be remembered that for every unit of horsepower realized by this water at Lockport, four units of similar horsepower would be produced at Niagara, where the natural conditions are so much more favorable. Without, therefore, going into further detail in a discussion of this question, I feel clear that no such case of necessity has been presented by the evidence before me as would justify the proposed injury to the many varied interests in the great waterways of our lakes and their appurtenant rivers.

"* * * In short, after a careful consideration of all the facts presented, I have reached the following conclusions:

1. That the diversion of 10,000 cubic feet per second from Lake Michigan as applied for in this petition would substantially interfere with navigable capacity of the navigable waters in the Great Lakes and their connecting rivers.

2. That that being so, it would not be appropriate for me, without express Congressional sanction to permit such a diversion, however clearly demanded by the local interest of the sanitation of Chicago.

3. That on the facts here presented, no such case of local permanent necessity is made evident."

4. That the provisions of the Canadian treaty for a settlement by joint commission of 'questions or matters of difference' between the United States and Canada offer a further reason why no administrative officer should authorize a further diversion of water, manifestly so injurious to Canada, against Canadian protest."

On October 6, 1913 the United States filed another bill to enjoin the Sanitary District from diverting more than 4,167 cubic feet per second of water from Lake Michigan (the amount authorized by the permits issued by the Secretary of War) and the 1908 suit and the 1913 suit were consolidated and heard as one. After these cases were submitted to the court, they were held in abeyance for six years before Judge Kenesaw Mountain Landis gave an oral opinion in favor of the United States on June 19, 1920. No decree was entered, however, and thereafter Judge Landis resigned in 1922 to become dictator of organized baseball. Judge Carpenter then heard further arguments and, on June 18, 1923, directed judgment for the relief demanded by the United States. From this decree an appeal was taken to the United States Supreme Court where the decree was affirmed in January, 1925.[17]

The United States Supreme Court, in affirming the decree of the United States District Court, enjoining increased diversion of water from Lake Michigan through the Chicago Drainage Canal, said in part:[18]

"This is not a controversy between equals. The United States is asserting its sovereign power to regulate commerce and to control the navigable waters within its jurisdiction. It has a standing in this suit not only to remove obstruction to interstate and foreign commerce — the main ground, which we will deal with last — but also to carry out treaty obligations to a foreign power bordering upon some of the lakes concerned, and, it may be, also on the footing of an ultimate sovereign interest in the lakes. The Attorney General, by virtue of his office, may bring this proceeding, and no statute is necessary to authorize the suit. *United States v. San Jacinto Tin Co.*, 125 U. S. 273, 31 L.ed. 747, 8 Supt. Ct. Rep. 850. With regard to second ground, the Treaty of January 11, 1909 (36 Stat. at L. 2448), with Great Britain, expressly provides against uses 'affecting the natural level or flow of boundary waters' without the authority of the United States or the Dominion of Canada within their respective jurisdictions and the approval of the International Joint Commission agreed upon therein. As to its ultimate interest in the lakes, the reasons seem to be stronger than those that have established a similar standing for a state, as the interests of the nation are more important

17. *Sanitary District of Chicago* v. *United States,* 266 U.S. 405 (1925).
18. 266 U.S. 405 at pp. 425-426, 432 (1925).

than those of any state. * * * The main ground is the authority of the United States to remove obstructions to interstate and foreign commerce. There is no question that this power is superior to that of the states to provide for the welfare or necessities of their inhabitants. In matters where the states may act, the action of Congress overrides what they have done. * * *

"The parties have come to this court for the law, and we have no doubt that, as the law stands, the injunction prayed for must be granted. As we have indicated, a large part of the evidence is irrevelant and immaterial to the issues that we have to decide. Probably the dangers to which the city of Chicago will be subjected if the decree is carried out are exaggerated; but, in any event, we are not at liberty to consider them here as against the edict of a paramount power. The decree for an injunction as prayed is affirmed, to go into effect in sixty days, without prejudice to any permit that may be issued by the Secretary of War according to law."

On March 3, 1925, the Secretary of War, John W. Weeks, granted a permit to the Sanitary District of Chicago authorizing a diversion of water from Lake Michigan not to exceed 8500 cubic feet per second, upon certain conditions. This was a temporary permit, looking to a progressive reduction in the diversion as rapidly as possible, and this permit was granted for humanitarian reasons only.[19]

Under Section 4 of the 1925 permit, it was provided that: "The Sanitary District of Chicago shall carry out a program of sewage treatment by artificial processes which will provide the equivalent of complete (100%) treatment of the sewage of the human population of at least 1,200,000 before the expiration of the permit." The permit was to expire, if not previously revoked or specifically extended, on December 31, 1929.

Meanwhile, for many years, even before the Canal was opened in 1900, the Federal Government had viewed with considerable alarm the extensive plans that had been made to construct and complete

19. The various permits recite that they were issued pursuant to section 10 of the Rivers and Harbors Act of March 3, 1899 (30 U.S. Stat. at L.1151) which reads as follows:

Sec. 10. That the creation of any obstruction not affirmatively authorized by Congress, to the navigable capacity of any of the waters of the United States is hereby prohibited; and it shall not be lawful to build or commence the building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river, or other water of the United States, outside established harbor lines, or where no harbor lines have been established, except on plans recommended by the Chief of Engineers and authorized by the Secretary of War, and it shall not be lawful to excavate or fill, or in any manner to alter or modify the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor or refuge or enclosure within the limits of any breakwater, or of the channel of any navigable water of the United States, unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of War prior to beginning the same."

the Chicago Drainage Canal with its state law required abstraction through such Canal of huge quantities of water from Lake Michigan. Studies had been made of this situation and it was estimated that a diversion of 10,000 cubic feet per second of the waters of the Great Lakes-St. Lawrence watershed would lower the levels of the Lakes Michigan and Huron and lower St. Mary's River about six to eight inches at mean lake stage, Lakes Erie and Ontario five to six inches and the St. Lawrence River more than six inches in its upper reaches to more than five inches at Montreal. The Great Lakes port cities protested the proposed action by the Sanitary District of Chicago. Many people in Canada objected also. The residents of the lower Illinois River valley voiced their fears concerning the damage that might result to their farms since any flood damage would be accentuated by the Chicago diversion.

On April 24, 1899, the United States District Engineer at Chicago, in reporting upon the initial application of the Sanitary District to open the Chicago Drainage Canal and reverse the Chicago River, said in part:

> "* * * It is a strange fact that this city has expended or will expend, over $30,000,000 with the intention of diverting an apparently unlimited amount of water from the Great Lakes to the Mississippi drainage area for sanitary purposes without finding out whether such diversion would be allowed by the great interests of the United States and the Colonies of Great Britain along the chain of Great Lakes in the navigation of the rivers and harbors of the Great Lakes. Now they ask the authority of an executive officer of the United States to open a channel that will to some unknown extent lower the levels of all the Great Lakes below Lake Superior and of their outlets, introduce a current also unknown and not to be ascertained otherwise than by actual experiment, in Chicago River, the most important navigable river of its length on the Globe, but which is already obstructed by bridges, masses of masonry and bends, and of difficult navigation at best.
>
> "The possible effects of this diversion are not known, further than that to some unknown degree they will be injurious. Whether the amount of this injury will be so small as to be accepted by the interests affected in view of the manifest advantages and apparent necessities of their neighbors, cannot be determined by other than the interests themselves.
>
> "It is clear to me that I am not competent to make a recommendation as to what should ultimately and definitely be done.
>
> "* * *In my opinion the abstraction of from 300,000 to 600,000 cubic feet per minute will permanently lower Michigan, Huron and Erie from 3 to 8 inches; not more than 8 nor less than 3 inches, corresponding to an extreme reduction of from 160 to 466 tons in carrying capacity of the large vessels of the Lakes, and that it will take from three to four years for

this full effect to be attained. But the State law is unlimited in its requirements. 20,000 cubic feet per minute must be taken from Lake Michigan for each 100,000 population of the district; already nearly 400,000 c. ft. must be taken, and at the same ratio of increase for a few decades, in a very short time there must be taken 1,000,000 c. ft. per minute under this indefinite law. The amount should be limited and the injurious effect stopped somewhere.

"The mean current to be introduced in Chicago River upon the opening of the canal is estimated by the Engineers of the Drainage Board at one and one-fourth miles per hour or 110 ft. per minute. This is simply an assumption that with such velocity in an unobstructed river, the amount of 300,000 cubic feet per minute can be discharged through Chicago River but I have seen this River so jammed with vessels, drawing all the water that is in it, that by leaping from deck to deck I could cross the river. What the velocity would be in such condition with Lake Michigan on one side and a great fall on the other side of such vessels, no one knows. But it is a simple mathematical problem to determine the effect on steel-plate vessels of from 2,000 to 4,000 tons mass drifting upon or striking stone piers with a velocity of near two feet a second. They will go to the bottom."

The above warning voiced by the United States District Engineer of Chicago almost nine months before the Chicago Drainage Canal was opened on January 17, 1900, went unheeded.

(d) *History and Present Status of the Litigation Involving the Great Lakes States over the Diversion of Waters of Lake Michigan at Chicago.*

After the Chicago Drainage Canal was opened in 1900 and the diversion of waters from the Great Lakes-St. Lawrence system had begun; various aroused civic groups and city officials along the Great Lakes filed protests and made personal appearances before the several Secretaries of War to demand the cessation of the Chicago diversion because of the huge continuing damages being inflicted upon the peoples of the Great Lakes states. In the City of Chicago, too, there was considerable objection to the abstraction of large quantities of water from the Great Lakes-St. Lawrence watershed. On March 14, 1901, the Chicago River Improvement Association protested against the diversion of water from Lake Michigan through the Chicago River and the Chicago Drainage Canal because of the interference with navigation occasioned by the swift current introduced into the Chicago River. The landowners along the lower Illinois River complained that their crops were damaged by floods whose intensity and destruction were increased by the diversion of water from Lake Michigan in times of heavy rainstorms.

However, except for the suits filed by the Federal Government, which at this time had not been finally decided, no relief appeared imminent. Then, at one of the hearings before Secretary of War John W. Weeks in early 1922, complaint was made that despite the continued abstraction of huge quantities of water from Lake Michigan by the Chicago Sanitary District and despite the violation of the permits issued by the Secretaries of War up to that time, no agency of the Government appeared capable of stopping the Chicago diversion, notwithstanding the huge continuing damages being inflicted upon the peoples of the Great Lakes States and the port cities. Secretary Weeks asked his Judge Advocate General what could be done in this situation, and he suggested that the lake states bring an original action in the United States Supreme Court to enjoin the continued abstraction of waters from the Great Lakes-St. Lawrence watershed.

Thereafter, on July 14, 1922, the State of Wisconsin filed an original bill in the United States Supreme Court against the Sanitary District of Chicago and the State of Illinois, seeking an injunction against the diversion of waters of the Great Lakes through the Chicago Drainage Canal. On October 5, 1925, an amended bill was filed and the states of Wisconsin, Minnesota, Ohio and Pennsylvania became co-complainants. In 1926, the states of Michigan and New York each filed separate bills against the State of Illinois and the Sanitary District of Chicago wherein they sought to enjoin the defendants from diverting any water from Lake Michigan. The lake states contended that the Permit issued by Secretary of War Weeks, dated March 3, 1925, was ultra vires and void and constituted no authority for the abstratcion of the waters of the Great Lakes-St. Lawrence System by the State of Illinois and the Sanitary District of Chicago.

The United States Supreme Court referred these causes to Honorable Charles Evans Hughes as Special Master,[20] and after full hearings the Special Master filed his report on November 25, 1927. In his report, Special Master Hughes made, among others, the following findings of fact:

> "(e) The Chicago diversion — As the Chicago drainage canal created a new outlet for the water of Lake Michigan, it is not open to dispute that this diversion has operated to reduce the levels of the Great Lakes (other than Lake Superior) below the levels which otherwise would have existed. * * *"
>
> "I find that the full effect of a diversion of 8,500 c. f. s. of water from Lake Michigan at Chicago through the drainage canal of the Sanitary District would be to lower the levels of Lakes Michigan and Huron approximately six inches at mean

20. 271 U.S. 650 (1926).

lake levels; the levels of Lakes Erie and Ontario, approximately five inches at mean lake levels; and the levels of the connecting rivers, bays and harbors harbors, so far as they have the same mean levels as the above-mentioned lakes, to the same extent, respectively. (p. 104) * * *"

"I find, further, that an increase of the diversion at Chicago above 8,500 c. f. s. would cause an additional lowering of the levels of the lakes and their connecting waterways in proportion to the amounts above stated. Thus a diversion of an additional 1,500 c. f. s. or a total diversion of 10,000 c. f. s. would cause an additional lowering in Lakes Michigan and Huron of about one inch, and in Lakes Erie and Ontario a little less than one inch, with a corresponding additional lowering in the connecting waterways having the same levels at the lakes respectively.

"I also find that if the diversion at Chicago were ended, assuming that other diversions remained the same, the mean levels of the lakes and rivers affected by the Chicago diversion would be raised in the course of several years (about five years in the case of Lakes Michigan and Huron and about one year in the case of Lakes Erie and Ontario) to the same extent as they had been lowered, respectively, by that diversion. (p. 105) * * *"

"The Great Lakes and their connecting channels form a natural highway for transportation having a water surface of over 95,000 square miles and a shore line of 8,300 miles, extending from Duluth-Superior, and from Chicago and Gary, to Montreal, at the head of deep-draft ocean navigation on the St. Lawrence. There are approximately 400 harbors on the Great Lakes and connecting channels, of which about 100 have been improved by the Federal Government. The Federal improvements in the case of harbors as a rule consist of the excavation and maintenance of channels from deep water in the lakes to the harbor entrance. Inner or local harbors are located inside of the Federal channels, and the depths in the inner harbors have been obtained and are maintained at local expense. For example, the inner harbor at the city of Milwaukee consists of three rivers which have been improved and maintained at local expense for a distance of eight miles. Inner harbors are necessary to afford practical navigation. Extensive and expensive loading, unloading and other terminal facilities have been constructed in these various ports within the territory of the complainant States, on the Great Lakes, at local expense. The water levels in the inner harbors and channels maintained at local expense and connecting with Federal channels and with the Great Lakes are ordinarily identical with and directly dependent upon the levels of the lakes with which they connect, except that in time of flood there might be some slight slope created at the mouth of the connecting river. (p. 107) * * *

"I am satisfied that the evidence requires the finding that the lowering of lake levels of approximately six inches has had

a substantial and injurious effect upon the carrying capacity of vessels, and has deprived navigation and commercial interests of the facilities which otherwise they would have enjoyed in commerce on the Great Lakes.

"With respect to the other items of damage alleged by the complainant States, similar considerations are deemed to be controlling. The witnesses naturally observe the total lowering of lake levels, and much of the testimony permits no satisfactory conclusion as to the damage that can be attributed exclusively to the Chicago diversion accounting for only six inches of the total reduction. But there is sufficient evidence to require the finding that a lowering of six inches has been a substantial contribution to the injury caused by the total reduction, in connection with fishing and hunting grounds, the availability and convenience of beaches at summer resorts, and public parks. (pp. 116-117) * * *"

"I therefore find that the complainants have established that the diversion through the Chicago drainage canal has caused substantial damage to their navigation, commercial and other interests as above stated. (p. 118) * * *

Special Master Hughes summarized his conclusions of law as follows:

"1. That the complainants present a justiciable controversy.

2. That the State of Illinois and the Sanitary District of Chicago have no authority to make or continue the diversion in question without the consent of the United States.

3. That Congress has power to regulate the diversion, that is, to determine whether and to what extent it should be permitted.

4. That Congress has not directly authorized the diversion in question.

5. That Congress has conferred authority upon the Secretary of War to regulate the diversion, provided he acts in reasonable relation to the purpose of his delegated authority and not arbitrarily.

6. That the permit of March 3, 1925, is valid and effective according to its terms, the entire control of the diversion remaining with Congress." (p. 196) * * *

In his recommendations for a decree, the Special Master concluded as follows:

"In the light of these conclusions, the bill, in my opinion, should be dismissed. I think, however, that if a situation should develop in which the defendants were seeking to create or continue a withdrawal of water from Lake Michigan without the sanction of Congress or of administrative officers acting under its authority, the complainant States have such an in-

terest as would entitle them to bring a bill to restrain such action.

"I therefore recommend that the bill be dismissed without prejudice to the right of the complainants to institute such to prevent a diversion of water from Lake Michigan in case such diversion is made or attempted without authority of law. (p. 197)"

On January 14, 1929, the United States Supreme Court rendered its decision in which the court reversed the Special Master in his construction of the law but sustained his findings of fact. The Court held that the complainants were entitled to a decree which would be "effective in bringing that violation (of the lake states' rights) and the unwarranted part of the diversion to an end."[21] However, by way of avoiding any unnecessary hazard to the health of the people of Chicago, the court decided to frame its decree so as to allow a reasonable and practicable time within which to provide some other means of disposing of the sewage of the Sanitary District, reducing the diversion as the artificial disposition of the sewage increased from time to time, when a permanent, final and effective injunction should issue.[22]

In the opinion written by the late William Howard Taft, then Chief Justice, the United States Supreme Court stated that "the normal authority of the Secretary of War Under Section 10 of the Act of March 3, 1899, ch. 425, is to maintain the navigable capacity of Lake Michigan, and not to restrict or destroy it by diversions,"[23] and that such authority cannot be expanded merely to aid the Sanitary District of Chicago to dispose of its sewage. The Court then upheld the right of the lake states to an injunction to enjoin the State of Illinois and the Sanitary District of Chicago from diverting water from Lake Michigan through the Chicago Drainage Canal beyond what diversion is necessary to keep up the normal navigation in the Chicago River and the Port of Chicago.

In touching upon the damages suffered by the Great Lakes states and their people due to the diversion at Chicago, the Court said:[24]

"The master finds that the damage due to the diversion at Chicago relates to navigation and commercial interests, to structures, to the convenience of summer resorts, to fishing and hunting grounds, to public parks and other enterprises, and to riparian property generally, but does not report that injury to agriculture is established. * * *"

"The great losses to which the complainant states and their citizens and their property owners have been subjected by the

21. 278 U.S. 367 (1929).
22. *Wisconsin et al* v. *Illinois, et al,* 278 U.S. 367 (1929).
23. 278 U.S. 367 at p. 417.
24. 278 U.S. 367 at pp. 408 and 409.

reductions of levels in the various lakes and rivers, except Lake Superior, are made apparent by these figures.

The Court then concluded that:[25]

"In increasing the diversion from 4,167 cubic feet a second to 8,500, the drainage district defied the authority of the national government resting in the Secretary of War. And in so far as the prior diversion was not for the purposes of maintaining navigation in the Chicago river, it was without any legal basis, because made for an inadmissible purpose. It, therefore, is the duty of this court by an appropriate decree to compel the reduction of the diversion to a point where it rests on a legal basis, and thus to restore the navigable capacity of Lake Michigan to its proper level. The sanitary district authorities, relying on the argument with reference to the health of its people, have much too long delayed the needed substitution of suitable sewage plants as a means of avoiding the diversion in the future. Therefore, they cannot now complain if an immediately heavy burden is placed upon the district because of their attitude and course. The situation requires the district to devise proper methods for providing sufficient money and to construct and put in operation with all reasonable expedition adequate plants for the disposition of the sewage through other means than the lake diversion.

"Though the restoration of just rights to the complainants will be gradual instead of immediate, it must be continuous and as speedy as practicable, and must include everything that is essential to an effective project.

"The court expresses its obligation to the master for his useful, fair, and comprehensive report.

"To determine the practical measure needed to effect the object just stated and the period required for their completion there will be need for the examination of experts; and the appropriate provisions of the necessary decree will require careful consideration. For this reason, the case will be again referred to the Master for a further examination into the questions indicated. * * *"

The causes were then referred back to Honorable Charles Evans Hughes who was directed to take testimony on the practical measures needed to dispose of the sewage without the unlawful diversion of water, and the time required for their completion, and to report his conclusions for the formulation of a decree. On December 17, 1929, the report of the Special Master upon re-reference was filed, and on April 14, 1930, the decision of the United States Supreme Court on re-reference was rendered[26] wherein the Court, through Mr. Justice Holmes, again pointed out it was already decided that:

"the defendants are doing a wrong to the complainants, and that they must stop it. They must find a way out of their peril.

25. 278 U.S. 367 at pp. 420-421.
26. 281 U.S. 179 (1930).

> We have only to consider what is possible if the state of Illinois devotes all its powers to dealing with an exigency to the magnitude of which it seems not yet to have fully awakened. It can base no defenses upon difficulties that it has itself created. If its constitution stands in the way of prompt action, it must amend it or yield to an authority that is paramount to the state.[27]

The Court further held that costs should be paid by the defendants "who have made this suit necessary by persisting in unjustifiable acts."[28]

On April 21, 1930, the decree of the Court was entered.[29] This decree provided, in part, that: (1) on and after July 1, 1930, the diversion of the waters of the Great Lakes-St. Lawrence system through the Chicago Drainage Canal should be reduced to an annual average of 6,500 cubic feet per second, in addition to domestic pumpage, (2) on and after December 31, 1935, this diversion should be reduced to 5,000 cubic feet per second, in addition to domestic pumpage, and (3) on and after December 31, 1938, this diversion should be reduced to 1,500 cubic feet per second, in addition to domestic pumpage.

In October, 1932, the states of Wisconsin, Minnesota, Ohio and Michigan applied for the appointment of a Commissioner or other special officer to execute the decree of April 21, 1930,[30] on behalf of and at the expense of the defendants. The four lake states complained of the delay in the completion of the works and facilities embraced in the program of the Sanitary District of Chicago for the dispositon of sewage so as to obviate danger to the health of the inhabitants of the District on the reductions in diversion on December 31, 1935 and December 31, 1938, as the decree provided, in the diversion of water from Lake Michigan through the Chicago Drainage Canal.

The Court directed the Sanitary District of Chicago and the State of Illinois to show cause why they had not taken appropriate steps to effect compliance with the provisions of the decree of April 21, 1930. After hearing upon the return of the rule, the Court appointed Edward F. McClennen as Special Master to make summary inquiry and to report to the Court: (1) as to the cause of the delay in obtaining approval by the Secretary of War of the construction of controlling works in the Chicago River and the steps necessary to obtain such approval and prompt construction; (2) as to the causes of the delay in providing for the construction of the Southwest Side Treatment

27. 281 U.S. 179 at p. 197.
28. 281 U.S. 179 at p. 200.
29. 281 U.S. 696 (1930).
30. 281 U.S. 696 (1930).

Works and the steps which should be taken for that purpose, and (3) as to the financial measures on the part of the Sanitary District or the State of Illinois which should be reasonable and necessary to carry out the decree of the court.[31]

The Special Master proceeded accordingly and after full hearing submitted his report and recommendations. The Special Master in his finding concluded that: (1) the causes of the delay in obtaining approval of the construction of controlling works in the Chicago River "are a total and inexcusable failure of the defendants to make an application to the Secretary of War for such approval," and (2) the causes of delay in providing for the construction of the Southwest Side Treatment Works are (a) "an inexcusable and planned postponement of the beginning of construction of these works to January 1, 1935, which left an inadequate time for their completion before December 31, 1938, at the rate of progress expected or to be expected under the methods pursued by the Sanitary District," and (b) "the failure to proceed to a definite decision as to site and to the acquisition of a site so chosen," and (c) "the failure to proceed with reasonable diligence to prepare designs, plans and specifications for the works at this site or some other site of the West Side Works."[32]

The Special Master concluded, with respect to the steps to be taken to secure completion of the works above mentioned, that because of its financial situation, the Sanitary District is at present powerless to contract "for the design or construction of controlling works or for the construction in a large way of the Southwest Side Treatment Works." He further concluded that "in the conditions which now exist, there is no reasonable financial measure which the Sanitary District can take, which it is failing to take;" and that "no way has come to light whereby this decree can be performed under tolerable conditions, unless the State of Illinois meets its responsibility and provides the money."[33] The Special Master then recommended that the decree of April 21, 1930 be enlarged so as to require the State of Illinois to provide the moneys necessary and to take the appropriate steps, to secure the completion of adequate facilities for the treatment and disposition of the sewage in order to carry out the decree of the United States Supreme Court.[34]

Upon that report, the Supreme Court on May 22, 1933, rendered its decision,[35] affirming the Special Master's report. On the same day,

31. 287 U.S. 578 (1932).
32. Report of Special Master Edward F. McClennen, dated April 10, 1933, pp. 5-60, 125-126.
33. Report of Special Master Edw. F. McClennen, dated Apr. 10, 1933, pp. 61-88, 126.
34. Report of Special Master, Edw. F. McClennen, dated Apr. 10, 1933, pp. 61-112, 126-128.
35. 289 U.S. 395 (1933).

the United States Supreme Court enlarged the decree[36] to provide in part that the State of Illinois was required to take all necessary steps to cause and secure the completion of adequate sewage disposal plants and sewers, to the end that the reductions in diversion should have been made at the times fixed in the decree.

Thereafter the Committee on Rivers and Harbors, House of Representatives, adopted on June 15, 1934, a resolution on the question whether it was advisable for the United States to purchase the canals owned by the Sanitary District of Chicago. This proposal was opposed by the States of Wisconsin, Ohio, Minnesota and Michigan. The Sanitary District of Chicago demanded that the Federal Government purchase the canals and pay to it approximately 90 million dollars for the canals. The United States District Engineer at Chicago and the War Department reported unfavorably upon this proposal and such purchase was not made.

Several years after the failure to obtain approval of the proposal to have the United States Government purchase the Chicago Drainage Canal, the proponents of increased diversion again turned to Congress for aid. The time was approaching when the final reduction in diversion to 1,500 cubic feet per second, plus domestic pumpage, had to be made under the decree of April 21, 1930. The required reductions in the diversion to 6,500 cubic feet per second, plus domestic pumpage, on July 1, 1930, and to 5,000 cubic feet per second, plus domestic pumpage, on December 3', 1935, had all been made. There remained only the final reduction on December 31, 1938, to 1,500 cubic feet per second, plus domestic pumpage. The very thought of making this final reduction in diversion was abhorrent to many groups in and about Chicago. The fight for a large continuing diversion was supported by the following groups: (1) those who honestly believed the decision of the United States Supreme Court was wrong and should be rectified; (2) those who desired a large diversion for power purposes; (3) those who claimed additional diversion was necessary for navigation on the Illinois or Mississippi Rivers, and (4) those who used the diversion issue for publicity purposes or for political reasons.

The result was that on August 20, 1937, Congressman Claude V. Parsons, of Illinois, introduced a bill[37] which, had it been enacted into law and held constitutional, would have authorized an increase in diversion of water from Lake Michigan through the Canal to 5,000 c. f. s., plus domestic pumpage. This bill was vigorously opposed by the Lake states, port cities and groups residing along the lower Illinois

36. 289 U.S. 710 (1933).
37. H.R. 8327, 75th Congress, 2nd Session.

River. After extensive hearings in 1938, this bill was not recommended for passage by the Rivers and Harbors Committee.

Then on January 11, 1940, the State of Illinois applied for a modification of the decree entered by the Supreme Court on April 21, 1930, so as to permit a temporary increase of the diversion to 5,000 c. f. s., in addition to domestic pumpage, until December 31, 1942, upon the grounds that conditions in the Illinois Waterway, particularly at Joliet, Illinois, due to deposit in such waterway of untreated or partially treated sewage by the Sanitary District of Chicago, constituted a menace to health. After a hearing upon this application, the Court, on April 30, 1940, rendered a *per curiam* opinion, in which was said, in part:[38]

> "The State of Illinois has failed to show that it has provided all possible means at its command for the completion of the sewage treatment system as required by the decree as specifically enlarged in 1933 (289 U. S. 395, 710.) No adequate excuse has been presented for the delay. Nor has the State submitted appropriate proof that the conditions complained of constitute a menace to the health of the inhabitants of the complaining communities or that the State is not able to provide suitable measures to remedy or ameliorate the alleged conditions without an increase in the diversion of water from Lake Michigan in violation of the rights of the complainant States as adjudged by this Court."

However, in order to satisfy the Court that no actual menace to the health of the inhabitants of the complaining communities existed, the cause was referred to Monte M. Lemann, Esq., as Special Master, to hold hearings and to report to the Court together with recommendations for a decree. After extensive hearings, the Special Master filed his report on March 31, 1941, in which he held that "the actual condition of the Illinois Waterway by reason of the introduction of untreated sewage creates in the summer months a nuisance through offensive odors at Joliet and Lockport, but does not present a menace to health. No nuisance conditions were proven to exist along the Waterway at any other points."[39] The Special Master recommended that a decree be entered dismissing the petition of the State of Illinois for a modification of the decree of April 21, 1930. The United States Supreme Court overruled the exceptions to the report of the Special Master and confirmed the report.[40]

---

38. 309 U.S. 569 (1940).
39. Report of Special Master Monte M. Lemann, dated March 31, 1941, p. 110.
40. 313 U.S. 547 (1941). It should be noted that under the decree of April 21, 1930, the United States Supreme Court still retains jurisdiction of the Chicago Water Diversion Controversy.

(e) *The fight in Congress and before Federal Officials for increased Diversion at Chicago.*

However, the Supreme Court's decision of May 26, 1941, did not end the fight by Chicago interests for increased diversion. Measures on this subject were introduced in each session of the United States House of Representatives by Representatives Parsons, Reed, Sabath and Rowan, of Illinois. No one of these measures was ever approved by the Rivers and Harbors Committee of the House of Representatives, and the diversion of water at Chicago remained at 1,500 cubic feet per second, plus domestic pumpage, as fixed by the decree of April 21, 1930.

Then came Pearl Harbor and the entry of the United States into World War II. Those seeking increased diversion saw here an opportunity to obtain increased diversion through the intervention of the President of the United States or the War Department. So, on December 22, 1941, the City Club of Chicago sent telegrams to President Roosevelt and to the Secretary of War at Washington requesting an increase in diversion from 1,500 cubic second feet to 10,000 c. f. s., plus domestic pumpage, on the ground that this increase in diversion would help the war effort by providing additional hydro-electric power and by releasing for other uses hundreds of coal freight cars now needed to provide coal for steam power plants in the Chicago area. It was contended that an increase in diversion to 10,000 cubic second feet for the duration of the war would quadruple the electric power output and that this additional power would serve the war industries at Wilmington, Joliet and other nearby centers.[41]

Thereafter, Mayor Edward J. Kelly of Chicago also wired the President and the Secretary of War requesting increased diversion, but on the ground that such additional diversion was needed to protect the health of the people of Chicago, and particularly the war workers in the Calumet area where it was alleged that the polluted waters of Lake Michigan constituted a threat to the domestic water supply on Chicago's south side.

41. The Sanitary District of Chicago today uses all of the electricity generated at Lockport for its own purposes and, in addition, purchases much additional electricity. The Sanitary District has, in fact, no extra power to sell to others and it is doubtful that there would be much available for outside use from the Lockport plant even though the diversion were increased to 10,000 c.f.s. Any electricity generated would however, benefit the Sanitary District of Chicago. The Special Master in his report to the United States Supreme Court, dated March 31, 1941, in discussing the 10-day experimental flushing when the total flow at Lockport, less domestic pumpage, averaged 9,973 cubic feet per second, said that "the additional water which came through the wheels of the Sanitary District powerhouse at Lockport (during the 10 days) generated power worth $12,500, of which the District had the benefit." See page 82 of Special Master's Report dated March 31, 1941.

On December 26, 1941, and again on January 5, 1942, the Secretary of War, through the Chief of Engineers, United States Army, advised the City Club of Chicago that the War Department had no jurisdiction to authorize an increase in diversion and that the United States Supreme Court alone had jurisdiction in the premises.

Meanwhile, on January 27, 1942, the Federal Power Commission at Washington dismissed, without prejudice, the application of the State of Illinois for a major power license for the development of four power sites located on the Illinois Waterway between Lockport and Starved Rock, Illinois. The State of Illinois had never provided the necessary funds to complete these power projects because it felt that it would be unwise to expend the necessary funds unless the State of Illinois had some assurance that the minimum diversion would be at least 5,000 cubic second feet, plus domestic pumpage. Illinois had made it plain that if it obtained a diversion of at least 5,000 c. f. s., plus domestic pumpage, the State would again file an application with the Federal Power Commission for a power license for these sites.

During the entire year 1942, Illinois and Chicago interests pushed intermittent drives to obtain increased diversion by appealing to the President, to the Secretary of War and to the War Production Board — Honorable Donald Nelson, Chairman. No Government official or Department at Washington at this time ever attempted to issue any orders to increase the diversion at Chicago. The Lake states then contended and still contend that no Governmental official or Federal Department has any authority whatsoever to modify or set aside any of the terms of the decree of the United States Supreme Court dated April 21, 1930, and that such Court alone has this power.

During the year 1943, there were introduced in Congress three measures which, had they been enacted into law and held constitutional, would have had the effect of circumventing and nullifying the United States Supreme Court decree of April 21, 1930[42] which limits the diversion to 1,500 c. f. s., plus domestic pumpage. These measures were:

1. H. J. Resolution 148, "To permit the diversion of waters from Lake Michigan to safeguard public health," by Representative Sabath of Illinois:

2. H. R. 1026, a bill "To promote interstate and foreign commerce, to improve the navigability of the Lakes-to-the-Gulf Waterway, and for other purposes," by Representative Reed of Illinois; and

3. H. R. 3146, a bill "To provide for a temporary diversion by the Sanitary District of Chicago of an additional amount

42. 281 U.S. 696.

of water from the Great Lakes-St. Lawrence System or watershed in order to protect the health of war workers, members of armed forces, and other persons living in and near Chicago," by Representative Rowan of Illinois.

All three measures were referred to the House Committee on Rivers and Harbors for consideration.

Meanwhile, President Roosevelt referred to Honorable Donald Nelson, Chairman of the War Production Board and to Leland Olds, Chairman of the Federal Power Commission, the question of whether he (the President) should exercise his emergency war powers by authorizing an increase in diversion at Chicago. After study, a report was made to the President on August 6, 1943 and this report is commonly referred to as the Nelson-Olds Report, in which it was recommended "that exercise of emergency war powers for this purpose (increasing temporarily diversion at Chicago) did not appear appropriate." The report stated that "Such action would imply that the Supreme Court would not, on proper application, take all steps necessary to enable the City of Chicago adequately to safeguard public health."

Thereafter the House Rivers and Harbors Committee began hearings on the Sabath Resolution[43] on September 28, 1943.

Many witnesses were called by the proponents of the Sabath Bill to testify in its behalf.

Those favoring the passage of the Sabath Bill argued in substance as follows: That a menace to public health existed by reason of the pollution by war industries located largely in Indiana, of the waters of the Calumet area of Lake Michigan; that the polluted waters of Lake Michigan might reach the Dunne and 68th Street water intakes (which are located in Lake Michigan 4½ miles off the shores on Chicago's south side); that this pollution had created a serious menace to the health and lives of 1,400,000 people living in the area and served with water from these two intakes; that there were already 971 reported cases "of typhoid and infantile paralysis, due to pollution of this water," and that the increased diversion was necessary to protect the lives and health of 1,400,000 people residing in Chicago. It was conceded that there were but two deaths from typhoid in Chicago in the entire year of 1942, and that there was no evidence proving that polio is due to drinking water. At these hearings, the opposing Great Lakes states and port cities, through the Great Lakes Harbors Association, vigorously opposed this bill.

The position of the opposing Great Lakes states was stated at these hearings to be:

43. H. J. Resolution 148, 78th Congress, 1st Session.

First: Neither the Rivers and Harbors Committee nor the Congress has the authority, under the United States Constitution, to pass the Sabath Bill in its present form, because the Congress has no jurisdiction in the premises nor has Congress power to authorize the transfer of huge quantities of water from the Great Lakes watershed to the Mississippi watershed with substantial damages to the Great Lakes states and their peoples.

Second: The Supreme Court of the United States has expressly retained jurisdiction of this subject matter, and the proper forum is that Court. It has the machinery, and it has functioned many times, both on the application of the State of Illinois, and also on the application of the opposing Lake States to determine issues arising out of the Chicago diversion.

Third: The interests of Canada, a friendly foreign nation, with whom we have been at peace for more than 150 years; and which has a vital interest in maintaining the integrity of the lake levels, must be considered.

Fourth: There is no merit to the Sabath or similar bills because: (1) No danger to public health exists. Mayor Kelly of Chicago in radio addresses has boasted that Chicago is the healthiest city in the world, and that Chicago has the safest water supply in the country; (2) the pollution situation in the Calumet area of Lake Michigan is better than it has been in the past and presents no actual threat to the city's water supply; (3) increased diversion would not materially aid this situation; (4) remedial measures (without increased diversion) to ameliorate conditions complained of are available, including (a) construction of a barrier in the Calumet River to prevent industrial and domestic wastes from being discharged into Lake Michigan, (b) budgeting of authorized diversion to increase the water taken through the Calumet River so as to draw any polluted waters away from the South Side water intakes during the summer months when complaints of pollution are loudest, (c) reducing domestic consumption of water by 50% to make chlorination of domestic water more effective, (d) enjoining by legal process the State of Indiana and the cities of Gary, Hammond, East Chicago and Whiting from depositing untreated industrial wastes and sewage into Lake Michigan; (5) increased diversion would result in serious and continuing damages to the navigation and commercial interests, to harbor facilities and riparian property in the Great Lakes States; (6) increased diversion would retard the war effort by reducing and carrying capacity of the lake fleet which hauls so much iron ore, grain, finished products and other necessities.

After all the evidence was placed before the Committee, the Chairman closed the hearings. The Rivers and Harbors Committee then studied carefully the arguments for and against increased diversion and once again refused to recommend the Sabath or any of the other diversion bills for passage.

The failure of Chicago interests to secure approval in Committee of the Sabath or other diversion bills did not lessen the efforts to obtain increased diversion. The appeals to Congress and to Federal officials did not stop. On the contrary, continued pressure for a large diversion at Chicago has been rather constantly applied in Washington.

(f) *Recent Efforts to Obtain Increased Diversion.*

The latest appeals to Washington have in general been based on an alleged health hazard to the people residing in the Chicago metropolitan area due to contaminated water in the south end of Lake Michigan. This claimed danger to public health has at all times been grossly exaggerated. The Lake states and port cities through the Great Lakes Harbors Association, as might be expected, vigorously opposed all such petitions for increased diversion. The result to date has been a denial of all such appeals. During the April and May, 1946 nation-wide coal and railroad strikes, an urgent request was again made to Washington for increased diversion. This time the appeal was based upon the ground that increased diversion would permit more hydro-electric power to be generated at the Lockport Power House of the Sanitary District and thus ameliorate the conditions brought about by the power shortage which the said coal and transportation strikes created. This plea again proved futile but from all indications the Chicago interests have not yet given up their perennial efforts to obtain a large diversion at the expense of the Great Lakes states and their peoples.

During past months there appeared in one of the Chicago newspapers a series of articles on the pollution of waters and the Chicago diversion problem. In these articles, the author seeks to justify the Chicago demand for increased diversion of water from Lake Michigan through the Chicago Drainage Canal on the ground that more water is needed for sewage disposal. Spokesmen for some of the interests pushing the efforts for increased diversion have said on many occasions that they would never give up their attempts to obtain increased diversion. Even if Congress were to authorize increased diversion for sewage or sanitation purposes it is plain that the United States Supreme Court would hold such action unconstitutional.[44]

---

44. *Wisconsin et al* v. *Illinois et al,* 278 U.S. 367 (1929).

The recent flare-up in the long-drawn-out Chicago diversion controversy might indicate the beginning of another drive for increased diversion. Considered in the light of past events, one must remain skeptical of any permanent solution to this problem in the very near future. The Lakes Diversion litigation could well exceed the controversy described in Dickens' "Bleak House" in costliness and time required for a final disposition of the issues involved.[45]

45. In November, 1946, the Chicago Sanitary District again made application to the Secretary of War for increased diversion on the basis of emergency conditions created by the recent coal strike. This application was opposed by protests filed with the Secretary of War by the Attorneys General of several of the Lake States. Editorials favoring increased diversion appeared in at least one Chicago newspaper, and the hope was expressed that a change in political administration might force a reopening of the case in the Supreme Court. On or about December 4, Secretary of War Patterson denied the application for increased diversion.

PART TWO

THE CHICAGO WATER DIVERSION CONTROVERSY*

Herbert H. Naujoks

PART TWO: Legal Problems Involved in the Chicago Water Diversion Controversy

(a) *In General*

In the preceding pages the background, history and present status of the Chicago Water Diversion litigation was outlined. In this connection reference was had to various pertinent decisions rendered by the United States Supreme Court. While that court made certain specific rulings concerning many of the legal questions raised in these suits, there still remains unsettled at least one important constitutional question. The following pages contain a discussion of the legal problems involved in this litigation, including an analysis of the legal problem concerning the power or lack of power of Congress to authorize the abstraction or permanent diversion of waters from the Great Lakes watershed to the Mississippi River watershed to the detriment of the Great Lakes system. This problem is of more than mere academic interest because many bills have been introduced in Congress which, if passed, would have purported to authorize diversions of water from the Great Lakes system in excess of the amount fixed by the Supreme Court decree of April 21, 1930. The passage of any such measure by Congress would immediately bring before the United States Supreme Court the question of the constitutionality of such action by Congress, since it is clear that the Lakes states would never admit the validity of such an Act unless the United States Supreme Court first approved of the same.

In the brief filed by the State of Michigan with Hon. Charles Evans Hughes, Special Master, on June 7, 1927, the then Attorney General of Michigan, William W. Potter (later Associate Justice of the Michigan Supreme Court) aptly described the situation with respect to the magnitude and scope of the legal problems as follows:

> "The questions herein are not only far reaching in their material consequences, but their proper solution involves, in the last analysis, the fundamental principles of constitutional government.
>
> "In the language of Lord Coke in Calvin's case —
> 'I find, a mere stranger in this case, such a one as the eye of the law (our books and book-cases) never saw, as the ears of the law (our reporters) never heard of, nor the mouth of the law, (for judex est lex loquens) the

*This is the second in a series of three articles on this subject. The first appeared in the December issue of the Review; the last will appear in the May issue.

> Judges, our forefathers of the law, never tasted: I say, such a one, as the stomach of the law, our exquisite and perfect record of pleadings, entries, and judgments, (That make equal and true distribution of all cases in question) never digested'."

Special Master Hughes remarked once during the trial, when ruling upon the admissibility of certain evidence, that while the legal questions in the case were complex and manifold, there were nevertheless some matters outside the scope of the issues raised by the pleadings. Mr. Chief Justice Taft, speaking for the Court, likewise noted that "the controversies have taken a wide range."

(b) *The Jurisdiction of the United States Supreme Court to entertain the original suits brought by the Great Lakes States.*

At the very outset in the suits filed by Wisconsin, Michigan, New York, Ohio, Pennsylvania and Minnesota in the Chicago Water Diversion litigation, the Sanitary District of Chicago and the State of Illinois, by demurer and motion, moved to dismiss the original suits filed in the United States Supreme Court by the Great Lakes States on the ground that the controversy involved was not justiciable and hence of a nature not appropriate to the exercise of judicial power. The defendants contended that the controversy was not justiciable because: (1) the bill of complaint asked the Court to regulate navigation — a constitutional function of Congress and not the Court; (2) the United States and other states were indispensable parties; (3) the bill set out neither juridical right nor any injury to the complainant states.[46]

The constitutional provision involved was Section 2 of Article III of the Constitution of the United States, which provides that:

> "The judicial power shall extend to all Cases, in Law and Equity, arising under this Constitution, the Laws of the United States, * * * Controversies between two or more states; — between a State and Citizens of another State; * * *
>
> "In all Cases * * * in which a State shall be a Party, the Supreme Court shall have original jurisdiction. In all other Cases before mentioned, the Supreme Court shall have appellate Jurisdiction, both as to Law and Fact, with such Exceptions, and under such Regulations as the Congress shall make."

The United States Supreme Court has laid down the rule generally with respect to original jurisdiction of actions between states of the Union that wherever a controversy between states is of such

[46] The Court overruled the motion to dismiss the bill and delayed stating its conclusion as to its jurisdiction until all the facts were before the Court. 270 U. S. 634 (March 22, 1926). On January 14, 1929, ,the Court decided it had jurisdiction to decide the respective rights of the complainant Lake States and Illinois and the Chicago Sanitary District (278 U.S. 367, 409).

a nature that, if the states were independent and completely sovereign, the controversy would then become the subject of diplomatic representations with the right to resort to force in the event of the failure of diplomatic representations, the case is one which is justifiable in the United States Supreme Court in its original jurisdiction. It is clear that the original jurisdiction of the United States Supreme Court in such matters was intended to take the place of the right of one state of the Union to vindicate its wrongs at the hands of another state by negotiation and force, which rights were surrendered by the states at the adoption of the United States Constitution.

In *Missouri v. Illinois,*[47] the Supreme Court said:

> "An inspection of the bill discloses that the nature of the injury complained of is such that an adequate remedy can only be found in this court at the suit of the state of Missouri. It is true that no question of boundary is involved, nor of direct property rights belonging to the complainant state. But it must surely be conceded that if the health and comfort of the inhabitants of a state are threatened, the state is the proper party to represent and defend them. If Missouri were an independent and sovereign state, all must admit that she could seek a remedy by negotiation, and, that failing, by force. Diplomatic powers and the right to make war having been surrendered to the general government, it was to be expected that upon the latter would be devolved the duty of providing a remedy and that remedy, we think, is found in the constitutional provisions we are considering.
>
> "The allegations of the bill plainly present such a case. The health and comfort of the large communities inhabiting those parts of the state situated on the Mississippi River are not alone concerned, but contagious and typhodial diseases introduced in the river communities may spread themselves throughout the territory of the state. Moreover, substantial impairment of the health and prosperity of the towns and cities of the state situated on the Mississippi River, including its commercial metropolis, would injuriously affect the entire state.
>
> "That suits brought by individuals, each for personal injuries, threatened or received, would be wholly inadequate disproportionate remedies, requires no argument."

In *Georgia v. Tennessee Copper Co.*[48] the Court said:

> "When the states by their union made the forcible abatement of outside nuissances impossible to each, they did not thereby agree to submit to whatever might be done. They did not renounce the possibility of making reasonable demands on the ground of their still remaining quasi-sovereign interests; and the alternative to force is a suit in this court."

---

[47] 180 U.S. 208, 241 (1901).
[48] 206 U.S. 230, 237 (1907).

In *North Dakota v. Minnesota*,[49] the court in discussing its original jurisdiction in controversies between states of the Union, said:

> "The jurisdiction is therefore limited generally to disputes which, between states entirely independent, might be properly the subject of diplomatic adjustment. They must be suits 'by a state for an injury to it in its capacity of quasi-sovereign. In that capacity the state has an interest independent of and and behind the titles of its citizens, in all the earth and air of its domain'."

In *Kansas v. Colorado*,[50] the court passed upon a demurrer to the complaint charging the state of Colorado with appropriation of waters of an interstate river in violation of the rights of the state of Kansas and its citizens and praying for injunctive relief against such appropriation of waters of the interstate water course. In discussing the justiciable character of that suit at page 140, the courts said:

> "Undoubtedly, as remarked by Mr. Justice Bradley in *Hans v. Louisiana,* 134 U.S. 1, 15, the Constitution made some things justiciable, 'which were not known as such at the common law; such, for example, as controversies between states as to boundary lines, and other questions admitting of judicial solution'. And as the remedies resorted to by independent states for the determination of controversies raised by collision between them were withdrawn from the states by the Constitution, a wide range of matters, susceptible of adjustment, and not purely political in their nature, was made justicable by that instrument."

Again at page 145, it was said:

> "Without subjecting the bill to minute criticism, we think its averments sufficient to present the question as to the power of one state of the Union to wholly deprive another of the benefit of water from a river rising in the former and, by nature, flowing into and through the latter, and that, therefore, this court, speaking broadly, has jurisdiction.
>
> "We do not pause to consider the scope of the relief which it might be possible to accord on such a bill. Doubtless the specific prayers of this bill are in many respects open to objection, but there is a prayer for general relief, and under that, such appropriate decree as the facts might be found to justify, could be entered, if consistent with the case made by the bill, and not inconsistent with the specific prayers in whole or in part, if that were also essential. *Tayloe v .Merchants' Insurance Co.* 9 How. 390,406; Daniell, Ch.Pr. (4th Am. ed.) 380."

The court then took the broad ground that the technicalities of the pleading which obtained in ordinary suits between private parties had no relation to controversies, practically international in

[49] 263 U.S. 365, 373 (1923).
[50] 185 U.S. 125, 140 (1902).

character; stripped the controversy of all technicalities, brushed aside all defects in the bill, and found that since there was a robust controversy between two states, the court would sit as an international tribunal and hear the controversy without even attempting a close analysis of the bill to discover whether or not it contained imperfections or inadequacies of statement. The court further said:[51]

> "Sitting, as it were, as an international, as well as a domestic tribunal, we apply Federal law, state law, and international law, as the exigencies of the particular case may demand, and we are unwilling in this case, to proceed on the mere technical admissions made by the demurrer. Nor do we regard it as necessary, whatever imperfections a close analysis of the pending bill may disclose, to compel its amendment at this state of the litigation. We think proof should be made as to the * * * circumstances, a variation in which might induce the court to either grant, modify or deny the relief sought or any part thereof."

The amended complaint in the Chicago Diversion controversy related to the equitable use of interstate waters lying partly in the defendant State of Illinois. It related to the alleged right of the State of Illinois to appropriate and abstract the waters of an interstate stream or watercourse to the injury of the complaining states, which are lower riparian states upon such interstate stream or watercourse. Such a claim of right upon the part of the State of Illinois and action on the part of that state in pursuance of such an asserted right to the injury of the various interests of the complaining states in the waters of the interstate stream or watercourse constituting the Great Lakes-St. Lawrence System creates a controversy between the complaining states and the State of Illinois, which, if such states were independent, would give rise to diplomatic negotiation between such states with the right to resort to force in the event of the failure of amicable adjustment.

In *Kansas v. Colorado,*[52] the court pointed out that:

> "One cardinal rule, underlying all the relations of the states to each other, is that of equality of right. Each state stands on the same level with all the rest. It can impose its own legislation on no one of the others, and is bound to yield its own views to none. Yet, whenever, as in the case of Missouri v. Illinois, supra, the action of one state reaches through the agency of natural laws, into the territory of another state,

---

[51] 185 U.S. 125 at p. 146.

[52] 206 U.S. 46, 97-98 (1907);. See also: Pennsylvania v. Wheeling Bridge Co., 13 How. 518 (1851); Wyoming v. Colorado, 259 U. S. 419 (1922); Missouri v. Illinois, 200 U. S. 496 (1906); Hans v. Louisiana, 134 U. S. 1 (1890); So. Carolina v. Georgia, 93 U. S. 4 (1876); New York v. New Jersey, 256 U. S. 296 (1921); Pennsylvania v. West Virginia. 262 U. S. 553 (1923).

> the question of the extent and the limitations of the rights of the two states becomes a matter of justiciable dispute between them, and this court is called upon to settle that dispute in a way as will recognize the equal rights of both and at the same time establish justice between them."

In all of these cases the right of a state to maintain an original suit in the United States Supreme Court upon grounds like or similar to those asserted by the complainants in the Chicago Diversion controversy was sustained by this court.

On the basis of the foregoing cases, the Supreme Court, in considering the Chicago Diversion controversy, brushed aside the objections of the defendants and, in affirming the Special Master's conclusions on the jurisdictional question, ruled that it had jurisdiction to decide the controversy concerning the diversion of the waters of Lake Michigan through the Chicago Drainage Canal.[53] On this point the Special Master's conclusion was:[54]

> "I am unable to conclude that the rights of the complainant states with respect to the diversion at Chicago of the waters of Lake Michigan, directly resulting in an appreciable diminution of the waters of the Great Lakes and connecting channels, to the alleged injury of the commercial and navigation interests of these states and their people, are any less susceptible of judicial determination than the rights of Kansas, Wyoming and North Dakota with respect to the waters of interstate streams."

As has been noted, the United States Supreme Court has repeatedly assumed jurisdiction in original actions brought in that court between states involving the diminution, apportionment, or pollution of interstate waters.[55] Some of these actions were brought by the state to vindicate wrongs suffered as a quasi-sovereign; some suits were brought in a proprietary capacity, and other suits were brought by states as parens patriae, in which the United States Supreme Court assumed original jurisdiction.

In *Georgia v. Tennessee Copper Co.*[56] it was held that the suit was "by a state for an injury to it in its capacity of quasi-sovereign. In that capacity, the state has an interest independent of and behind the title of its citizens, in all the earth and the air within its domain." It is obvious that the same holds true as to water. Clearly the Great Lakes states were authorized to maintain the original actions in the Supreme Court in their quasi-sovereign, as parens patriae, and in a proprietary capacity.

---

[53] Wisconsin et al. v. Illinois et. al., 278 U. S. 367, 409 (1929).
[54] Report of Special Master Hughes, filed Nov. 23, 1927, at p. 143.
[55] Nebraska v. Wyoming 325 U.S. 589, 610 (1945); Colorado v. Kansas 320 U. S. 383 (1943).
[56] 206 U.S. 230, 237 (1907).

In *Pennsylvania v. West Virginia,*[57] the court pointed out that the withdrawal of natural gas from the interstate stream was "a matter of grave public concern in which the state, as a representative of the public, has an interest apart from that of the individuals affected."

The defendants in the Chicago Diversion controversy originally relied very strongly upon the decisions in *Louisiana v. Texas*[58] and *Hans v. Louisiana,*[59] but neither the Special Master nor the Supreme Court were persuaded by those cases. The United States Supreme Court affirmed the Master's conclusions sustaining the right of the court to assume jurisdiction in the causes in the following language:[60]

> "The pleadings question the jurisdiction of this court and the sufficiency of the facts set forth in the bills to constitute a cause of action. These issues, although raised, are not pressed by the defendants, and we concur with the Master in his conclusion that they are met completely by our previous decisions. *Missouri v. Illinois,* 180 U. S. 208, 45 L. ed. 497, 21 Sup. Ct. Rep. 331, s. c. 200 U. S. 496, 50 L. ed. 572, 26 Sup. Ct. Rep. 268; *Hans v. Louisiana,* 134 U. S. 1, 33 L. ed. 842, 10 Sup. Ct. Rep. 504; *Sanitary Dist. v. United States,* 266 U. S. 405, 69 L. ed. 352, 45 Sup. Ct. Rep., 176; *Kansas v. Colorado,* 185 U. S. 125, 46 L. ed. 838, 22 Sup. Ct. Rep. 552, s. c. 206 U. S. 46, 51 L. ed. 956, 27 Sup. Ct. Rep. 655; *New York v. New Jersey,* 256 U. S. 296, 65 L. ed. 937, 41 Sup. Ct. Rep. 492; *Wyoming v. Colorado,* 259 U. S. 419, 66 L. ed. 999, 42 Sup. Ct. Rep. 552; *North Dakota v. Minnesota,* 263 U. S. 365, 68 L. ed. 342, 44 Sup. Ct. Rep. 138; *Pennsylvania v. West Virginia,* 262 U. S. 553, 623, 67 L. ed. 1117, 1143, 32 A.L.R. 300, 43 Sup. Ct. Rep. 658, 263 U. S. 350, 67 L. ed. 1144, 44 Sup. Ct. Rep. 123; *Georgia v. Tennessee Copper Co.* 206 U. S. 230, 237, 51 L. ed. 1038, 1044, 27 Sup. Ct. Rep. 618, 1 Ann. Cas. 488."

It should be emphasized that the Court, in passing upon its jurisdiction to hear and decide an original action between states, determines the question of jurisdiction upon the facts of each individual case. Upon a proper showing the Court will not decline original jurisdiction even though the suit might involve to some extent continuing supervision of the case over a period of years or the exercise of some administrative functions.[61] The true test of original jurisdiction of the Supreme Court in suits between states is whether a genuine controversy of serious and grave importance exists. Diffi-

[57] 262 U. S. 553, at p. 592 (1923).
[58] 176 U. S. 1 (1900).
[59] 134 U. S. 1 (1890).
[60] 278 U. S. 367 at 409 (1929).
[61] Wisconsin v. Illinois, 278 U. S. 367 (1929); 281 U. S. 179 (1930); 289 U. S. 395 (1933); 309 U. S. 569 (1940); 311 U. S. 107 (1940); 313 U. S. 547 (1941); Wyoming v. Colorado, 259 U. S. 419 (1922). See also: Sanitary Dist. v. United States, 266 U. S. 405 (1925).

culties of drafting and enforcing a decree are not justification for the Supreme Court to refuse to perform the important function entrusted to it by the Constitution.[62]

(c) *The legal interest of the intervening Mississippi River States in the Chicago Diversion Controversy.*

During the pendency of the suits filed by the states of Wisconsin, Minnesota, Michigan, Ohio, Pennsylvania and New York against the Sanitary District of Chicago and the State of Illinois, four states bordering on the Mississippi River obtained leave and intervened as co-defendants in the suit filed by Wisconsin. These states were Missouri, Kentucky, Tennessee and Louisiana. Subsequently, these river states were joined by the States of Arkansas and Mississippi. While this intervention occurred in the Wisconsin case, the controversy was submitted to the Special Master just as though the intervening River States had been made co-defendants in all three cases.

The River States asserted their legal interest was in maintaining any benefits to Mississippi River navigation obtained through the Chicago diversion.

Concerning the benefit to Mississippi River navigation produced by the diversion, the Special Master reached the following conclusion:[63]

> "My conclusion is that the diversion from Lake Michigan, through the Drainage Canal, increases to some extent, during low water, the navigable depths over bars of the Mississippi River, but that the extent of this increase is not the subject of sufficiently accurate determination to warrant a finding. Upon all the facts it was permissible for the Secretary of War to reach the conclusion that the diversion from Lake Michigan of 8500 c.f.s. was, to some extent, an aid to navigation on the Mississippi River in time of low water. * * * It is not controverted that the Secretary of War had these considerations before him on the application and hearing which resulted in the permit of March 3, 1925."

The Lake States contended the River States have no sufficient legal interest in maintaining a benefit to the Mississippi River produced by the Chicago diversion since this diversion was illegal as based upon a void permit of the Secretary of War. The Supreme Court in touching upon this phase of the controversy held that:[64]

> "The intervening States on the same side with Illinois, in seeking a recognition of asserted rights in the navigation of the Mississippi, have answered denying the rights of the complainants to an injunction. They really seek affirmatively to preserve the diversion from Lake Michigan in the interest of

[62] Nebraska v. Wyoming, 325 U. S. 589, 616-617 (1945).
[63] Report of Special Master Hughes, filed November 23, 1927, p. 124.
[64] 278 U. S. 367 at p. 420 (1929).

such navigation and interstate ocmmerce though they have made no express prayer therefor. In our view of the permit of March 3, 1925, and in the absence of direct authority from Congress for a waterway from Lake Michigan to the Mississippi they show no rightful interest in the maintenance of the diversion. Their motions to dismiss the bills are overruled and so far as their answer may seek affirmative relief, it is denied."

The above ruling of the Supreme Court confirms the suggestion made previously by the same Court in the case of *Sanitary District v. United States,*[65] where the court in discussing the alleged interest of the Mississippi River states in the Chicago water diversion, said:

"The interest that the river states have in increasing the artificial flow from Lake Michigan is not a right, but merely a consideration that they may address to Congress, if they see fit * * *. But we repeat that the Secretary, by his action, took no rights of any kind. He simply refused an application of the Sanitary Board to remove a prohibition that Congress imposed. It is doubtful at least, whether the Secretary was authorized to consider the remote interests of the Mississippi states or the sanitary needs of Chicago."

The decision of the United States Supreme Court that the Mississippi River states who sought to intervene in the Chicago Diversion controversy had no legal standing is manifestly correct since such river states had not and could not show any lawful interest in increased diversion of water in excess of lawfully authorized withdrawals.

(d) *The Right of Illinois to Abstract Huge Quantities of Water from the Great Lakes System Without the Consent of the United States.*

In the suits filed by the Great Lakes States to enjoin the diversion of the waters of the Great Lakes System through the Chicago Drainage Canal, the Special Master in the original reference stated that one of the questions of law was * * * "whether the State of Illinois had the right, as against the complainants, to divert the waters of Lake Michigan in the manner and for the purposes shown, without the consent of the United States; * * *"[66]

The conclusion of the Special Master on this proposition of law was:[67]

"That the State of Illinois and the Sanitary District of Chicago have no authority to make or continue the diversion in question without the consent of the United States."

In the answer filed by the Sanitary District of Chicago (paragraph 14), after stating that the Illinois Act of May 29, 1889 relating to

[65] 266 U. S. 405, 431 (1925).
[66] Report of Special Master Hughes, dated Nov. 23, 1927, p. 140.
[67] Ibid, p. 196.

sanitary districts[68] required a diversion of water from Lake Michigan of about 9876 cubic feet per second for the disposal of sewage, it was said that the Sanitary District "cannot divert said quantity of water, and does not intend to divert said quantity of water except by and with the authority of the United States according to law." The State of Illinois adopted as its own answer the answer of the Sanitary District with the above averment. Under Section 20 of the Act of 1889 the Sanitary District was required to divert 200 cubic feet per minute (or 3-1/3 cubic feet per second) of water from Lake Michigan for each 1000 of population.

In the suit filed against the Sanitary District by the Federal Government,[69] the Sanitary District defended its action in diverting huge quantities of water from Lake Michigan by stating that it was proceeding under an Illinois Act of May 29, 1889 by which it was provided that a channel should be made of a size sufficient to take care of the sewage and drainage of Chicago as the population might require, with a capacity to maintain an ultimate flow of not less than 600,000 cubic feet per minute (or 10,000 cubic feet per second), and a continuous flow of not less than 20,000 cubic feet per minute for each 100,000 of the population within the Sanitary District of Chicago.

The Supreme Court in giving judgment for the United States enjoining a diversion of a greater quantity of water than that authorized by the permit of the United States Secretary of War, said:[70]

> "The main ground is the authority of the United States to remove obstructions to interstate and foreign commerce. There is no question but that this power is superior to that of the states to provide for the welfare or necessities of their inhabitants. In matters where the States may act, the action of Congress overrides what they have done. *Monongahela Bridge Co. v. United States,* 216 U. S. 177. *Second Employers' Liability Cases,* 223 U. S. 1, 53. But in matters where the national importance is imminent and direct even where Congress has been silent the States may not act at all. *Kansas City Southern Ry. Co. v. Kaw Valley Drainage District,* 233 U.S. 75, 79. Evidence is sufficient, if evidence is necessary, to show that a withdrawal of water on the scale directed by the statute of Illinois threatens and will affect the level of the Lakes, and that is a matter which cannot be done without the consent of the United States, even were there no international covenant in the case.

It is clear that the foregoing decision in the suit brought by the Federal Government settled authoritatively that neither the Sanitary District of Chicago nor the State of Illinois had the right to divert

---

[68] Illinois Laws of 1889, page 125.
[69] 266 U. S. 405 (1925).
[70] 266 U. S. 405 at p. 426 (1925).

the waters of the Great Lakes to the detriment of the complainant states, without the consent of the United States. The State of Illinois and the Sanitary District in the suits filed by the Great Lakes States did not argue that Illinois as a sovereign had the right as against complainant states to abstract up to 10,000 cubic second feet of water from Lake Michigan through the Chicago Drainage Canal. They defended their action in withdrawing 8,500 cubic feet per second, plus domestic pumpage (an additional 1700 cubic second feet) by relying on the authority conferred by the Permit of the Secretary of War issued on March 3, 1925. By this defense the Sanitary District and the State of Illinois abandoned any claim that the diversion would be legal without the consent of the Federal Government.

The Supreme Court in the suits filed by the Great Lakes States assumed that as aaginst complainant states the diversion would be unlawful unless Congress under the Constitution had the power to and did directly or through some duly authorized agency or officer give its consent to such diversion. This was in accord with the elementary rule of the common law that a riparian proprietor was entitled to the continued natural flow of a living stream or lake by or through his land without appreciable diminution in quantity or impairment in quality. This common law rule was generally adopted in the United States and obtains in Illinois and in all of the complainant lake states.[71]

The common law rule that an upper riparian state or owner upon an interstate stream or watercourse may not divert or use the waters of that stream within its borders in defiance of the rights of a lower riparian state or owner or without regard to injury to a lower riparian owner has been adopted in its broad sense by the United States Supreme Court.[72]

One of the leading cases on this subject is that of *Wyoming v. Colorado*,[73] wherein Colorado, an upper riparian state, asserted the right to divert and use the waters of an interstate stream or watercourse regardless of the injury such use may cause to a lower

---

[71] United States v. Rio Grande Dam & Irrigation Co., 174 U.S., 690, 702 (1899); Kimberly & Clark Co. v. Hewitt. 79 Wis. 334, 44 N.W. 303, 337 (1891); Village of Dwight v. Hayes, 150 Ill. 237, 37 N. E. 218 (1894); Minnesota Loan & Tr. Co. v. St. Anthony Falls Water Power Co., 82 Minn. 505. 85 N.W. 520, 523, (1901); Miller v. Miller, 9 Pa. 74, 49 Am. Dec. 545 (1848): Canton v. Shock, 66 Ohio St. 19, 63 N.E. 600 (1902); Stock v. Jefferson, 114 Mich. 357, 72 N.W. 132 (1897): Strobel v. Kerr Salt Co., 164 N.Y.303, 58 N.E. 142 (1900) Burk v. Simonson, 104 Ind. 173, 2 N.E. 309 (1885); Angell, Watercourses, sections 332, 335, 339.

[72] Missouri v. Illinois, 180 U. S. 208 (1901); Nebraska v. Wyoming, 325 U. S. 589 (1945); Kansas v. Colorado, 206 U. S. 46 (1907); Wyoming v. Colorado, 259 U. S. 419 (1922).

[73] 259 U. S. 419 (1922).

riparian state or owner. The Supreme Court flatly rejected this view, saying:[74]

> "The contention of Colorado that she, as a state, rightfully may divert and use, as she may choose, the waters flowing within her boundaries in this interstate stream, regardless of any prejudice that this may work to others having rights in the stream below her boundary, cannot be maintained. The river, thoroughout its course in both states, is but a single stream wherein each state has an interest which should be respected by the other. A like contention was set up by Colorado in her answer in Kansas v. Colorado, and was adjudged untenable. Further consideration satisfies us that the ruling was right. * * *"

Today it is well settled that an upper riparian owner, whether a state or an individual or corporation, may not appropriate and use the waters of an interstate watercourse to the detriment of the lower riparian state and its citizens. The question then arises as to what rule shall be applied in determining the uses which may be made of an interstate watercourse by the various states bordering thereon in conformity to their respective rights.

In the cases of *Kansas v. Colorado*,[75] and *Wyoming v. Colorado*,[76] the rule was laid down by the United States Supreme Court that in determining the apportionment of the uses of the interstate watercourse by upper and lower riparian states, the Court will take into consideration the law of waters of the respective states. Thus, a lower riparian owner cannot complain if the upper riparian state were permitted to make such uses of the interstate waters as are permitted by the law of waters of the lower riparian state. Accordingly, in *Kansas v. Colorado*[77] the Supreme Court found that the State of Colorado had adopted the appropriation doctrine of water which is common in the arid states located in the western section of our nation and that the State of Kansas by her law of waters recognized the right of riparian owners to a reasonable appropriation of the waters of a stream for irrigation purposes within the basin of the stream. The court then ruled that the State of Kansas could not complain of a reasonable appropriation of the waters of the Arkansas River by the state, or citizens of Colorado for irrigation purposes within the basin of that river.

In the later cases of *Wyoming v. Colorado*[78] the Supreme Court made the finding that both states had adopted the appropriation rule of the law of waters. Accordingly, the court then held that the

[74] 259 U. S. 419 at p. 466 (1922).
[75] 206 U. S. 46 (1907).
[76] 259 U. S. 419 (1922).
[77] 206 U. S. 46 (1907).
[78] 259 U. S. 419 (1922).

rights of Wyoming and Colorado in the interstate watercourse should be determined by the application of the law of waters common to both states. In applying this rule, the court held that the State of Colorado, as an upper riparian owner must recognize the prior applications made in the State of Wyoming in accordance with the rule in force in both states.

The court in these cases recognizes that the most favorable consideration that a state may ask in relation to her rights in an interstate watercourse is the determination of its rights on the basis of its own law of waters. Nothing could be fairer than this. It should be pointed out, however, that it does not follow that where two states have adopted entirely different laws relating to waters either one of them could prejudice the rights of the other state by adopting a law of waters which is not recognized by the other state and which rule of waters would seriously prejudice such other state. The decisions of the United States Supreme Court thus far have merely gone to the extent of holding that the lower riparian state cannot complain if her rights are determined in accordance with her own law of waters.

Turning our attention now, specifically to the Chicago Water Diversion cases, we find that the court applied the common law of waters in determining the rights of Wisconsin, Minnesota, Michigan, New York, Ohio and Pennsylvania, the lower riparian states, and the State of Illinois, the upper riparian state, in the waters of the Great Lakes. The common law of waters is in force in all of the complainant and defendant states. Thus, the Supreme Court correctly used the common law of waters as the proper measure of the rights of the complainant and defendant riparian states.

(e) *Whether Congress has Given Specific Authority for the Chicago Diversion.*

On this point the Special Master stated the issue as follows:[79]

> "If it be assumed that Congress has power to control the diversion, to determine whether and to what extent it should be permitted, the next question is whether it exercised such power, and, first, whether it has exercised it directly."

The contention of Illinois and the Sanitary District was that the Federal Acts of March 30, 1822[80] and of March 2, 1827[81] which provided for a project of a waterway from Lake Michigan to the Mississippi River authorized directly diversion of water from Lake Michigan. They argued that Congress was early and fully advised

[79] Report of Special Master Hughes, dated Nov. 23, 1927, p. 171.
[80] 3 U.S. Stats. at L. 659.
[81] 4 U.S. Stats. at L. 234.

as to the action of Illinois in providing for the construction of a drainage canal by the Sanitary District, the plan to divert water from Lake Michigan for the purpose of the canal and the extent of the diversion contemplated. It was also urged that Congress by improvements in the Illinois River and in the Chicago River sanctioned the diversion since a project depth of seven feet would require a diversion of at least 8500 cubic feet per second and, further, that Congress actively aided in the construction of the Chicago River segment of the Sanitary District's diversion works.

The Acts of 1822 and 1827 were considered by the Supreme Court in *Sanitary District v. United States,*[82] and were found to contain nothing with regard to the amount of water to be withdrawn from the lake, nor did any improvements in the Illinois or Chicago River indicate Congressional approval of the Chicago diversion, the Court saying:

> "The defendant in the first place refers to two acts of Congress: one of March 30, 1822, 3 Stat. 659, which became ineffectual because its conditions were not complied with, and another of March 2, 1827, c/51, 4 Stat. 234, referred to, whether hastily or not, in *Missouri v. Illinois,* 200 U.S. 496, 526, as an act in pursuance of which Illniois brought Chicago into the Mississippi watershed. The act granted land to Illinois in aid of a canal to be opened by the State for the purpose of uniting the waters of the Illinois River with those of Like Michigan, but if it has any bearing on the present case it certainly vested no irrevocable discretion in the State with regard to the amount of water to be withdrawn from the Lake. It said nothing on that subject. We repeat that we assume that the United States desires to see the canal maintained and therefore pass by as immaterial all evidence of its having fostered the work. Even if it had approved the very size and shape of the channel by act of Congress it would not have compromised its right to control the amount of water to be drawn from Lake Michigan. It seems that a less amount than now passes through the canal would suffice for the connection which the United States has wished to establish and maintain."

On the basis of the Congressional Acts, Reports of the War Department, and the above decision, the Special Master concluded that Congress had not directly authorized the diversion in question.[83]

(f) *Whether the Secretary of War had authority under the Act of March 3, 1899 to regulate the Chicago diversion.*

The lake states contended that Congress had given no authority for the Chicago diversion, even if Congress had such power. The defendants relied for their authority to abstract huge quantities of

[82] 266 U.S. 405, 427-428 (1925).
[83] Report of Special Master Hughes, dated Nov. 23, 1927, p. 196.

water from the Great Lakes-St. Lawrence watershed on the Permit of the Secretary of War, dated March 3, 1925, which was issued pursuant to section 10 of the Act of March 3, 1899.[84] The lake states contended that the Act of March 3, 1899, conferred no power upon the Secretary of War to authorize the diversion of water from Lake Michigan because of the language of that Act which plainly states: "That the creation of any obstruction not affirmatively authorized by Congress to the navigable capacity of any waters of the United States is hereby prohibited." It was argued that this provision clearly provides that there could be no obstruction to the navigable capacity of any waters of the United States without the affirmative authorization of Congress, namely, a general or special act of Congress. It was further contended that other provisions of that statute make no exceptions to the general prohibition contained in the first part of the Act. Thus, under the complainant states construction of that Act it is unlawful to create any obstruction to the navigable capacity of the waters of the United States without specific consent of Congress (which had not been given in this matter) but in addition thereto, the acts enumerated in other parts of section 10 of the Act of March 3, 1899, could not be done without a permit of the Secretary of War, even though such acts do not obstruct the navigable capacity of any waters of the United States. It was also argued that delegation by Congress under the Act of 1899 of power to the Secretary of War to authorize the Chicago diversion would be invalid.

The Special Master disagreed with these contentions of the lake states regarding the construction and validity of the Act of March 3, 1899. The Special Master concluded that the delegation of authority to the Secretary of War was not unlimited. He decided that section 10 of the Act of March 3, 1899, properly construed, conferred authority upon the Secretary of War to determine what is or is not an unreasonable obstruction to the navigable capacity of the waters of the United States under the circumstances of the particular case and that such determination is as immune from judicial review as if Congress had acted directly.[85]

The United States Supreme Court, in considering the validity, scope and application of section 10, of the Rivers & Harbors Act of March 3, 1899, held that the true intent of that Act of Congress was that unreasonable obstructions to navigation and navigable capacity were to be prohibited and that in the cases described in the second and third clauses of Section 10, the Secretary of War was authorized to determine what in the particular cases constituted an

[84] 30 U. S. Stat. at L. 1151.
[85] Report of Special Master, dated Nov. 23, 1927, pp. 176-191.

unreasonable obstruction. The Court also held this construction of the Act did not constitute an unlawful delegation of legislature power. In discussing the Act the Court said, in part:[86]

> "The policy carried out in the Act of March 3, 1899, had been begun in the Act of September 19, 1890, chap. 907, 26 Stat. at L. 454, 455. Sections 9 and 10 were the rearranged result of the provisions of Secs. 7 and 10 of the Act of 1890. A new classification was made in Secs. 9 and 10 of the Act of 1899, and substituted for Sec. 10 of the Act of 1890. The latter provided that the creation of any obstruction to navigable capacity was prohibited, unless 'affirmatively authorized by law,' and this was changed so as to read 'affirmatively authorized by Congress.' The change in the words of the first clause of Sec. 10 was intended to make mere state authorization inadequate. Sanitary Dist. v. United States, 266 U. S. 405, 429, 69 L. ed. 352, 364, 45 Sup. Ct. Rep. 176; United States v. Bellingham Bay Boom Co., 176 U. S. 211, 44 L. ed. 437, 20 Sup. Ct. Rep. 343. It was not intended to override the authority of the state to put its veto upon the placing of obstructing structures in navigable waters within a state, and both state and Federal approval were made necessary in such case. Cummings v. Chicago, 188 U. S. 410, 47 L. ed. 525, 23 Sup. Ct. Rep. 472. The words 'affirmatively authorized by Congress' should be construed in the light of the administrative exigencies which prompted the delegation of authority in the succeeding clauses. Congress, having stated in Sec. 9 as to what particular structures its specific consent should be required, intended to leave to the Secretary of War, acting on the recommendation of the Chief of Engineers, the determination of what should be approved and authorized in the classes of cases described in the second and third clauses of Sec. 10. If the section were construed to require a special authorization by Congress whenever in any aspect it might be considered that there was an obstruction to navigable capacity, none of the undertakings specifically provided for in the second and third clauses of Sec. 10 could safely be undertaken without a special authorization of Congress. We do not think this was intended. The supreme court of Maine, in Maine Water Co. v. Knickerbocker Steam Towage Co., 99 Me. 473, 59 Atl. 953, took the same general view in construction of the same section. It held that the broad words of the first clause of that section were not intended to limit the second and third clauses and that Congress's purpose was a direct prohibtion of what was forbidden by them except when affirmatively approved by the Chief of Engineers and the Secretary of War. We concur in this view.
>
> "The true intent of the Act of Congress was that unreasonable obstructions to navigation and navigable capacity were to be prohibited, and in the cases described in the second

[86] Wisconsin et al. v. Illinois et al., 278 U.S. 367, at pp. 412-414 (1929).

and third clauses of Sec. 10, the Secretary of War, acting on the recommendation of the Chief of Engineers, was authorized to determine what in the particular cases constituted an unreasonable obstruction. * * *"

"But it is said the construction thus favored would constitute it a delegation by Congress of legislative power and invalid. We do not think so."

The Court, having decided that the Secretary of War, pursuant to the Act of March 3, 1899, could take some action with regard to diversions of water without any general or special act of Congress on that subject then considered the validity of the Permit issued by the Secretary of War, dated March 3, 1925, authorizing a diversion of 8500 cubic feet per second, in addition to domestic pumpage.

(g) *The Permit of March 3, 1925 as authority for the maintenance of the Chicago diversion.*

The United States Supreme Court, as was observed hereinbefore, in speaking of the Chicago diversion litigation, pointedly remarked that "the controversies have taken a wide range."[87] The legal questions concerning the power of the Court to decide the Chicago Diversion controversy, the right of Illinois to maintain the Chicago diversion without Congressional sanction, the construction and effect of the prohibition contained in the Federal Act of March 3, 1899, chapter 425, of obstructions to the navigable capacity of waters "unless affirmatively authorized by Congress," the necessity of obtaining Congressional approval in every case of such an obstruction, and other questions were interesting and important. Illinois possessed no authority to maintain the diversion without the consent of the United States.[88]

It was decided that the Federal Act of March 3, 1899 did not intend to require a special authorization in every case but that in accordance with other provisions of the Act the Secretary of War was left with authority, acting upon recommendation of the Chief of Engineers, to determine what should be approved and authorized in the class of cases described in the Act.[89] It was further decided that Congress had not affirmatively authorized the Chicago diversion.

Then the Court came to grips with the important question concerning the effect and operation of the Permit of March 3, 1925, as authority for the maintenance of the Chicago diversion.

On this point the Special Master said, in part:[90]

"In considering the validity of the permit of March 3, 1925, the exigency as it then existed must be considered. The prior

[87] Wisconsin et al v. Illinois et al, 278 U.S. 367 at p. 409 (1929).
[88] Sanitary District v. United States, 266 U.S. 405 (1925).
[89] 278 U.S. 367 at pp. 411-415 (1929).
[90] Report of Special Master Hughes, November 3, 1927, pp. 192, 196.

permit limiting the withdrawal to 4167 c.f.s. had been enforced by the Court without prejudice to such action as the Secretary of War might lawfully take. The question as to the validity of the permit of March 3, 1925, is narrowed to the point whether in allowing the increase of the diversion from 4167 c.f.s. to 8500 c.f.s. (both exclusive of Chicago's pumpage, *supra,* pp. 22, 81, 85) the Secretary of War acted arbitrarily and without reasonable relation to the purpose of his delegated authority. There had been, and was, an actual withdrawal of far more than this amount. The total flow through the drainage canal in the year 1924 had been 9465 c.f.s., and, exclusive of Chicago's pumpage 8191 c.f.s. (*supra,* p. 23). In exercising his authority under the statute, it was incumbent upon the Secretary of War to consider the interests of navigation, but he was bound to consider those interests in relation to the Chicago River and the Chicago harbor as well as in connection with the effect on other harbors and the levels of the lakes. * * *

"This permit, like those previously granted, was only a revocable license. (*Sanitary District v. United States,* 266 U. S. 405, 429.) But, as such, the permit was effective. It created no vested right in the Sanitary District. It is at all times subject to review, and the complete control of the diversion remains, as it should remain in view of the national interests involved, with Congress.

"In my opinion, the permit of March 3, 1925, is valid and effective. In this view, it should not be overridden by judicial action."

In his conclusions of law the Special Master held:[91]

"6. That the Permit of March 3, 1925, is valid and effective according to its terms, the entire control of the diversion remaining with Congress."

The Court, in considering the validity of the Secretary of War's Permit of March 3, 1925, said:[92]

"The normal power of the Secretary of War under Section 10 of the Act of March 3, 1899, is to maintain the navigable capacity of Lake Michigan and not to restrict it or destroy it by diversion. This is what the Secretaries of War and the Chiefs of Engineers were trying to do in the interval between 1896 and 1907 and 1913 when the applications for 10,000 cubic feet a second were denied by the successive Secretaries and in 1908 a suit was brought by the United States to enjoin a flow beyond 4,167 cubic feet a second. Then pending the suit, the Sanitary District disobeyed the restriction of the Secretary of War's permit and increased the diversion to 8,500 cubic feet in order to dispose of the sewage of that District. Had an injunction then issued and been enforced, the Port of Chicago almost immediately would have become practically unusable because of the deposit of sewage without a sufficient

[91] Ibid, p. 196.
[92] Wisconsin et al v. Illinois et al, 278 U.S. 396, 420-421 (1929).

flow of water through the Canal to dilute the sewage and carry it away. In the nature of things it was not practicable to stop the deposit without substituting some other means of disposal. This situation gave rise to an exigency which the Secretary, in the interest of navigation and its protection, met by issuing a temporary permit intended to sanction for the time being a sufficient diversion to avoid interference with navigation in the Port of Chicago. See New York v. New Jersey, 256 U. S. 296, 307, 308. The elimination and prevention of this interference was the sole justification for expanding the prior permit, the limitations of which had been disregarded by the Drainage District. Merely to aid the District in disposing of its sewage was not a justification, considering the limited scope of the Secretary's authority. He could not make mere local sanitation a basis for a continuing diversion. Accordingly he made the permit of March 3, 1925, both temporary and conditional — temporary in that it was limited in duration and revocable at will, and conditional in that it was made to depend on the adoption and carrying out by the District of other plans for disposing of the sewage.

"It will be perceived that the interference which was the basis of the Secretary's permit, and which the latter was intended to eliminate, resulted directly from the failure of the Drainage District to take care of its sewage in some way other than by promoting or continuing the existing diversion. It may be that some flow from the Lake is necessary to keep up navigation in the Chicago River, which really is part of the Port of Chicago, but that amount is negligible as compared with 8,500 feet per second now being diverted. Hence, beyond that negligible quantity, the validity of the Secretary's permit derives its support entirely from a situation produced by the Sanitary District in violation of the complainants' rights; and but for that support complainants might properly press for an immediate shutting down by injunction of the diversion, save any small part needed to maintain navigation in the river. In these circumstances we think they are entitled to a decree which will be effective in bringing that violation and the unwarranted part of the diversion to an end."

It is plain that the ruling of the Court with respect to the invalidity of the Permit of March 3, 1925, is correct. This construction is consistent with every court ruling theretofore made in the United States construing the effect of such a Permit.[93] These decisions all hold that a Permit of the Secretary of War, similar to the one here involved, constitutes no affirmative authority to invade the property rights of a third party. In the Chicago diversion suits,

[93] Hubbard v. Fort, 188 Fed. 987 (1911); Wilson v. Hudson County Water Co., 76 N.J. Eq. 543, 76 Atl. 560 (1910); New York v. New Jersey, 256 U.S. 296 (1921); Cobb v. Commissioners, 202 Ill. 427 (1903). In re Crawford County Levee & Drainage District, 182 Wis. 404 (1924); Atty. Gen. ex. rel. Becker v. Bay Boom W.R. & F. Co., 172 Wis. 363 (1920).

the action taken by Illinois and the Chicago Sanitary District, namely the diversion of huge quantities of water for sewage disposal, lowered the lake levels and thus decreased the navigable capacity of the Great Lakes with serious injury to the Great Lakes States and their peoples. The Act of 1899 only grants authority to prevent obstructions to navigation and not authority to create such obstructions. The basis of the Permit of March 3, 1925, was the disposition of Chicago's sewage by dilution. Manifestly, the Secretary of War exceeded his authority in this instance and the Permit was illegal and void.[94]

(h) *The Boundary Waters Treaty of January 11, 1909 (Ratified in 1910) as Authority for the Chicago Diversion.*

It has been urged on many occasions that the Boundary Waters Treaty of January 11, 1909 (Ratifications of this treaty were exchanged on May 5, 1910)[95] sanctions a diversion of 10,000 cubic second feet of water from the Great Lakes-St. Lawrence System through the Chicago Drainage Canal, and that this treaty furnishes justification for favorable consideration of legislation to diversion at Chicago of 5,000 to 10,000 cubic second feet of water in addition to domestic pumpage. One of the main objects of this treaty was recited to be the prevention of "disputes regarding the use of boundary waters." A preliminary article defined "boundary waters" as follows:

Preliminary Article

"For the purpose of this treaty boundary waters are defined as the waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof, along which the international boundary between the United States and the Dominion of Canada passes, including all bays, arms, and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers, and waterways, or waters flowing from such lakes, rivers, and

---

[94] Ase the permit of March 3, 1925 expired prior to the Court's decision of April 14, 1930 on re-reference (281 U.S. 179) a new pedmit was issued by the Secretary of War dated December 31, 1929, authorizing the diversion in addition to pumpage of 7,250 c.f.s. until July 1, 1930, and thereafter 6,500 c.f.s. but limiting the total flow at Lockport, including pumpage, to an average of 8,500 c.f.s. until July 1, 1930; the permit to expire on the effective date of the Supreme Court decree. The decree of the Court was dated April 21, 1930 (281 U.S. 696).
On June 26, 1930 the Secretary of ar issued a permit authorizing diversion of water "as specified in the said decree." The permit provided that the diversion, and the action of the Sanitary District to reduce the discharge, shall be under the supervision of the District Engineer at Chicago, and the diversion "under his direct control in times of flood on the Illinois and Des Plaines Rivers." The present diversion of 1,500 cubic feet per second plus domestic pumpage, is pursuant to a permit authorizing diversion of water "as specified" in the decree of April 21, 1930 (281 U. S. 696).

[95] 36 U.S. Stats at L. 2448.

waterways, or the waters of rivers flowing across the boundary." After this definition, there were the following provisions:

"ARTICLE I. The High Contracting Parties agree that the navigation of all navigable boundary waters shall forever continue free and open for the purposes of commerce to the inhabitants and to the ships, vessels, and boats of both countries equally, subject, however, to any laws and regulations of either country, within its own territory, not inconsistent with such privilege of free navigation and applying equally and without discrimination to the inhabitants, ships, vessels, and boats of both countries.

"It is further agreed that so long as this treaty shall remain in force, this same right of navigation shall extend to the waters of Lake Michigan and to all canals connecting boundary waters, and now existing or which may hereafter be constructed on either side of the line. Either of the High Contracting Parties may adopt rules and regulations governing the use of such canals within its own territory and may charge tolls for the use thereof, but all such rules and regulations and all tolls charged shall apply alike to the subjects or citizens of the High Contracting Parties and the ships, vessels, and boats of both of the High Contracting Parties, and they shall be placed on terms of equality in the use thereof.

"ARTICLE II. Each of the High Contracting Parties reserves to itself or to the several State Governments on the one side and the Dominion or Provincial Governments on the other as the case may be, subject to any treaty provisions now existing with respect thereto, the exclusive jurisdiction and control over the use and diversion, whether temporary or permanent, of all waters on its own side of the line which in their natural channels would flow across the boundary or into boundary waters; but it is agreed that any interference with or diversion from their natural channel of such waters on either side of the boundary, resulting in any injury on the other side of the boundary, shall give rise to the same rights and entitle the injured parties to the same legal remedies as if such injury took place in the country where such diversion or interference occurs; but this provision shall not apply to cases already existing or to cases expressly covered by special agreement between the parties hereto.

"It is understood, however, that neither of the High Contracting Parties intends by the foregoing provision to surrender any right, which it may have, to object to any interference with or diversions of waters on the other side of the boundary the effect of which would be productive of material injury to the navigation interests on its own side of the boundary.

"ARTICLE III. It is agreed that, in addition to the uses, obstructions, and diversions heretofore permitted or hereafter provided for by special agreement between the Parties hereto, no further or other uses or obstructions or diversions, whether temporary or permanent, of boundary waters on either side

of the line, affecting the natural level or flow of boundary waters on the other side of the line, shall be made except by authority of the United States or the Dominion of Canada within their respective jurisdictions and with the approval, as hereinafter provided, of a joint commission, to be known as the International Joint Commission.

"The foregoing provisions are not intended to limit or interfere with the existing rights of the Government of the United States on the one side and the Government of the Dominion of Canada on the other, to undertake and carry on governmental works in boundary waters for the deepening of channels, the construction of breakwaters, the improvement of harbors, and other governmental works for the benefit of commerce and navigation, provided that such works are wholly on its own side of the line and do not materially affect the level or flow of the boundary waters on the other, nor are such provisions intended to interfere with the ordinary use of such waters for domestic and sanitary purposes.

"ARTICLE IV. The High Contracting Parties agree that, except in cases provided for by special agreement between them, they will not permit the construction or maintenance on their respective sides of the boundary of a remedial or protective works or any dams or other obstructions in waters flowing from boundary waters or in waters at a lower level that the boundary in rivers flowing across the boundary, the effect of which is to raise the natural level of waters on the other side of the boundary unless the construction or maintenance thereof is approved by the aforesaid International Joint Commission.

"It is further agreed that the waters herein defined as boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other."

The treaty provided that the United States might authorize the the diversion within the State of New York of waters of the Niagara River above the Falls, for power purposes, not exceeding in the aggregate a daily diversion at the rate of 20,000 c.f.s., and that the United Kingdom, by the Dominion of Canada, or the Province of Ontario, might authorize a diversion of said waters, for power purposes, not exceeding a daily diversion at the rate of 36,000 c.f.s. (Art. V).

The International Joint Commission, under the treaty, is composed of six members, three appointed by each Government (Art. VII). It has jurisdiction over and passes upon all cases involving the use or obstruction or diversion of the waters with respect to which under Articles III and IV of the treaty the approval of the Commission is required. The Commission is to be governed by certain declared principles. Each of the High Contracting Parties, on its own side of the boundary, is to have "equal and similar rights in the use of the waters hereinbefore defined as boundary waters."

With reference to the use of boundary waters, it was provided that the following order of precedence should be observed among the various uses enumerated in the treaty for these waters, to-wit: (1) uses for domestic and sanitary purposes; (2) uses for navigation, including the service of canals for the purposes of navigation; (3) uses for power and for irrigation purposes. These provisions were not to "apply to or disturb any existing uses of boundary waters on either side of the boundary" (Art. VIII).

It was agreed that any other questions or matters of difference arising between the High Contracting Parties involving the rights, obligations, or interests of either in relation to the other or to the inhabitants of the other, along the common frontier between the United States and the Dominion of Canada, should be referred from time to time to the International Joint Commission for examination and report, upon the request of either Government. In such cases the International Joint Commission was authorized to examine into and report upon the facts, with such conclusions and recommendations as might be appropriate, subject to the restrictions or exceptions which might be imposed by the terms of the reference. But such reports should not be regarded as decisions either on the facts or the law and should not have the character of an arbitral award (Art. IX). And it was further agreed that any questions or matters of difference arising between the High Contracting Parties involving rights, obligations, or interests of the United States or of the Dominion of Canada either in relation to each other or to their respective inhabitants, might be referred for decision to the International Joint Commission on the consent of both parties (Art. X).

The contention that this Boundary Waters Treaty sanctions a large Chicago diversion and justifies the passage of legislation authorizing a diversion of 10,000 c.f.s. is wholly without merit. The statement of the then Secretary of State, Honorable Elihu Root, before the Foreign Relations Committee of the Senate when this treaty was under consideration, shows that it was not intended to cover Lake Michigan as a boundary water nor to affect the diversion of waters through the Chicago Drainage Canal. Among other things, Secretary Root said to the committee:

> "The treaty starts with defining the boundary waters as the waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof along which the international boundary between the United States and the Dominion of Canada passes, including all bays, arms, and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers, and waterways, or waters flowing from such lakes, rivers, and waterways.

"I have carefully guarded the terms of this treaty in order not to include Lake Michigan and in order not to involve Senator Cullom's constituents in the drainage canal in the treaty in any way.

"Then the treaty provides for what is now and what has been for our entire existence as a nation the free navigation by both countries of the boundary waters, with the provision that the same right of navigation shall extend to the waters of Lake Michigan, providing that so long as the present treaty remains in force the same right of navigation shall extend to the waters of Lake Michigan and to all canals connecting boundary waters and that the same rules and regulations and the same tolls shall apply to both the High Contracting Parties.

* * *

"The great bulk of the water goes on the Canadian side, and the Waterways Commission that was appointed some time ago to deal with the question of the Lake levels reports, I think, that 36,000 feet can be taken out on the Canadian side and 18,500 on the American side, without injury to the Falls. I thought it wise to follow the report of the Commission and I put in 1500 feet in addition to get round numbers, so our limit is higher than we want but their limit could not be cut down below what it is because there are three companies on the Canadian side who have the right and works there. * * * Then there is this further fact why we could not object to this 36,000 provision on the Canadian side. We are now taking 10,000 cubic feet a second out of Lake Michigan at Chicago, and I refused to permit them to say anything in the treaty about it.

* * *

"The definition of boundary waters was carefully drawn in order to exclude Lake Michigan. * * *

"* * * In the third place" (referring to the reasons for allowing the United States to divert but 20,000 c.f.s. while Canada was allowed 36,000 c.f.s.) "they consented to leave out of this treaty any reference to the drainage canal and we are now taking 10,000 cubic feet per second for the drainage canal which really comes out of this lake system."

The Boundary Waters Treaty and its application to the Chicago diversion came to the attention of the United States Supreme Court in the suit filed by the Federal Government against the Sanitary District of Chicago wherein the United States sought to enjoin the diversion of waters of Lake Michigan in excess of 4167 cubic second feet authorized by the permit of the Secretary of War.[96] The Court, in affirming the decree of the District Court which granted an injunction, held that the Federal Government had a standing in the suit to carry out treaty obligations to a foreign power bordering on

[96] Sanitary District of Chicago v. United States, 266 U.S. 405 (1925).

some of the Great Lakes. The Court in touching upon this subject said in part:[97]

> "With regard to the second ground, the treaty of January 11, 1909 (36 Stat. L.2448) with Great Britain, expressly provides against uses 'affecting the natural level or flow of boundary waters' without authority of the United States or the Dominion of Canada within their respective jurisdictions and the approval of the International Joint Commission agreed upon therein."

A careful reading of this case discloses that the Supreme Court was clearly of the opinion that the Chicago diversion was contrary to the boundary waters treaty of 1909 because such diversion had not been approved in accordance with the terms of such treaty.

The construction placed by the Supreme Court upon this treaty is in accordance with the interpretation placed thereon by the United States War Department, the administrative body entrusted with the enforcement and application of laws relating to navigable waters of the United States, by the Legislative Assembly of the Province of Ontario, Canada, and by the Minister of the Interior of Canada.

Secretary of War, Henry L. Stimson, in his opinion of 1913, denying the application of the Sanitary District of Chicago for a permit to divert 10,000 cubic second feet of water in Chicago, stated that the boundary waters treaty of 1909 did not sanction the Chicago diversion, and that such question should, in accordance with the terms of the treaty, be placed before the International Joint Commission.

In a resolution adopted by the Legislative Assembly of the Province of Ontario, Canada, in the year 1924 protesting agianst the Chicago diversion it was stated, in part, that "such diversion and abstraction is contrary to the International Treaty respecting boundary waters entered into between Canada and the United States, and the Canadian Government has been protesting and is protesting against such diversion for some time past to the Government of the United States."

In 1926, Honorable Charles Stewart, then Minister of the Interior, in a statement made in the House of Commons, declared that the Canadian Government had never recognized the Chicago diversion and promised that it would "continue to protest against the entire principle of abstracting water from the Great Lakes to another watershed."

It is submitted that this uniform interpretation of the Boundary Waters Treaty by the several branches of the two governments con-

---

[97] 266 U.S. 405 at p. 426 (1925).

cerned is conclusive as to its true meaning and intent, namely that the Chicago diversion is contrary to and amounts to a violation of this Treaty.[98]

However, further examination into the Treaty and the circumstances surrounding its signing and ratification may be warranted.

The chief purpose of this treaty was stated to be the prevention of "disputes regarding the use of boundary waters." The treaty provided that the United States might authorize the diversion, within the State of New York, of the Niagara River above the falls, for power purposes, not exceeding in the aggregate a daily diversion at the rate of 20,000 c.f.c., and that the United Kingdom, by the Dominion of Canada, or the Province of Ontario, might authorize a diversion of said waters, for power purposes, not exceeding a daily diversion at the rate of 36,000 c.f.s. (Art. V).

With reference to the use of boundary waters, it was provided in the treaty that the following order of precedence should be observed among the various uses enumerated in the treaty for these waters, to wit: uses for domestic and sanitary purposes; uses for navigation; and uses for power and irrigation purposes. These provisions were not to "apply to or disturb any existing uses of boundary water on either side of the boundary (Art. VIII)."

When this treaty was under consideration, it was not intended to cover Lake Michigan as a boundary water. The true facts in regard to the circumstances surrounding and leading to the signing of this treaty with reference to the then existing diversion of waters at Chicago, and the reasons for the apportionment of the waters of the Niagara River, are as follows:

(1) In considering the amount of water of the Niagara River to be allotted to Canada and to the United States, the Joint Committee decided that it would not disturb any works which were then in process of construction and completion, and for which moneys had already been expended.

(2) It appeared that a large part of the hydro-electric power which was to be generated on the Canadian side was under contract for use in the United States and this fact was given recognition in the allotment of water to the two countries.

(3) Most of the water in question, and subject to allotment, was on the Canadian side, and not on the American side.

(4) The amount of diversion at Chicago authorized under the temporary permits of the Secretaries of War from the year 1905 to 1910 was 4167 cubic second feet and, in fact, the diversion through

[98] Sanitary District v. United States, 266 U.S. 405 at p. 426 (1925).

the Chicago Sanitary Canal for the period 1905 through 1909 averaged a little more than 5,000 cubic second feet. The United States never authorized a diversion of 10,000 cubic second feet, and in 1908 the Federal Government filed a suit to enjoin the diversion of more than 4167 cubic feet from Lake Michigan. A second bill was filed in 1913 and the United States was ultimately successful.[99]

The foregoing clearly refutes the claim that a diversion of 10,000 cubic feet per second of water from Lake Michigan was sanctioned by Canada and the United States by the signing of the Treaty in question.

(i) *Other constitutional questions involved in the Chicago Water Diversion litigation.*

In addition to the legal problems considered heretofore, several interesting constitutional issues, (in addition to the question ocncerning the power of Congress to transfer water from one watershed to another which will be discussed in section (j) hereinafter) were raised in the Chicago Diversion cases. An analysis and discussion of these problems will be of interest to lawyers and students of constitutional law, as well as to those interested in the Chicago Diversion problem.

1. *Whether the diversion constitutes a preference to the ports of the State of Illinois over those of the other lake states in violation of Article I, Section 9, Clause 6 of the United States Constitution.*

One of the novel issues raised in this litigation was the contention that the diversion of large quantities of water from the Great Lakes-St. Lawrence system constituted a preference to the ports of the State of Illinois over the ports of the complaining Great Lakes States.

Art. I, Sec. 9, Clause 6 of the United States Constitution provides:

> "No preference shall be given by any Regulation of Commerce or Revenue, to the Ports of one State over those of another; nor shall Vessels bound to, or from, one State, be obliged to enter, clear, or pay Duties to another."

The effect of this provision of the Constitution was considered in *Pennsylvania v. Wheeling Bridge Co.*[100] The effect of this provision was again raised in *South Carolina v. Georgia,*[101] where the court in commenting upon the construction placed upon this provision in the *Wheeling Bridge Company* case, *supra,* said:

> "It was there said that the prohibition of such a preference does not extend to acts which may directly benefit the ports

[99] Sanitary District v. United States, 266 U.S. 405 (1925).
[100] 18 How. 421 (1856).
[101] 93 U.S. 4, 13 (1876).

> of one State, and only incidentally injuriously affect those of another, such as the improvement of rivers and harbors, the erection of lighthouses, and other facilities of commerce."

In the *Wheeling Bridge* case, *supra,* is was held that the fact that Congress had authorized the construction of a bridge over the Ohio River at Wheeling which incidentally might to some extent hurt navigation to the ports of Pittsburgh in Pennsylvania did not violate this provision. In *South Carolina v. Georgia, supra,* it was held that the act of the federal government, in closing one of two channels in the Savannah River where that river was divided by an island, did not come within this prohibition. The reason for such a holding was that where Congress, in the exercise of a lawful power, made an inmprovement at a port in one state which might incidentally affect the ports of another state, such incidental affect could not be construed to invalidate the exercise of power. That is, Congress may, for instance, improve the harbors of the ports of one state. Such improvement may incidentally tend to give such harbors a preference over those of another state by reason of the fact that such imrovements will make such harbors more attratcive to commerce. However, such an incidental result cannot interfere with such a valid congressional act. It is analogous to the rule that although Congress cannot arbitrarily injure riparian rights under the guise of improving navigation, any injury which is done to riparian rights n the lawful improvement of the navigation along the watercourse is *damnum absque injuria.* In short, the acts which do not come within this prohibition are those which are performed at the particular port or ports of a state, without any direct relation to the ports of other states, and where the results to the ports of other states can only be consequential and indirect. However, where the act of Congress directly gives a preference to the ports of one state over those of another, it is within the constitutional prohibition of Art. I, Sec. 9, Clause 6.

The lake states contended as follows: Were Congress to attempt to authorize the taking or attempt directly to take the waters of the Great Lakes away from the ports of the complaining states and give such waters to the ports of Illinois, it would be an act directly and positively giving a preference to the ports of Illinois over the ports of the complaining states. If Congress attempted to take all of the water of the Great Lakes by draining them, and give such waters to the ports of the state of Illinois for navigation purposes in either natural or artificial channels, such act would constitute a direct and positive preference of the ports of that state over the ports of the complaining states. If a lesser amount of water is taken away from the lakes, and consequently from the ports of the complaining

states, to give to the ports of Illinois for an artificial waterway, the preference can be nonetheless a preference though less in degree. The constitutional provision recognizes no degrees, perhaps for the well-known reason that a very small commercial advantage is sufficient to enable one port to ruin another. The constitutional prohibition does not say that Congress can give the ports of one state a little preference, or a medium preference, but that it can give them no preference.

The Special Master, in considering this point, referred to the *Wheeling Bridge* case[102] and then said:[103]

> "It was contended in that case that the Act of Congress declaring the bridge at Wheeling across the Ohio River to be a lawful structure gave a preference to that port over Pittsburgh, that the vessels to and from Pittsburgh navigating the Ohio and Mississippi Rivers were not only subject to delay and expense in the course of the voyage, but that the obstruction would necessarily have the effect of stopping the trade and business at Wheeling or to divert them in some other direction or channel of commerce. 'Conceding all this to be true' said the Court (id. p. 433), 'a majority of the courts are of the opinion that the act of Congress is not inconsistent with the clause of the constitution referred to — in other words, that is not giving a preference to the ports of one State over those of another, within the true meaning of that provision. There are many acts of Congress passed in the exercise of this power to regulate commerce, providing for a special advantage to the port or ports of one State, and which very advantage may incidentally operate to the prejudice of the ports in a neighboring State, which have never been supposed to conflict with this limitation upon its power. The improvement of rivers and harbors, the erection of lighthouses, and other facilities of commerce, may be referred to as examples. It will not do to say that the exercise of an admitted power of Congress conferred by the Constitution is to be withheld, if it appears, or can be shown, that the effect and operation of the law may incidentally extend beyond the limitation of the power. Upon any such interpretation, the principal object of the framers of the instrument in conferring the power would be sacrificed to the subordinate consequences resulting from its exercise. The consequences and incidents are very proper considerations to be urged upon Congress for the purpose of dissuading that body from its exercise, but afford no ground for denying the power itself, or the right to exercise it.' (id., pp. 433, 444).
>
> "The same point was raised in *South Carolina v. Georgia,* 93 U. S. 4. South Carolina insisted that the atcion of the Secretary of War in closing the channel of the Savannah River on the South Carolina side of Hutchinson's Island gave an un-

---

[102] Pennsylvania v. Wheeling Bridge Co., 18 How. 421 (1856).
[103] Report of Special Master Hughes, filed Nov., 1927, pp. 159-160.

constitutional preference to the ports of Georgia. The Court dismissed the contention, adopting the view expressed in the Wheeling Bridge case. I am of the opinion that the diversion in the present case, if otherwise lawfully authorized, cannot be regarded as beyond the power of Congress, as an unconstitutional preference of ports."

The United States Supreme Court, however, did not rule specifically on this constitutional issue inasmuch as that Court held the diversion unlawful on other grounds. The two opposing theories concerning the proper application of Act. I, sec. 9, Clause 6, of the United States Constitution to the facts involved in the Chicago Diversion litigation are of interest because of the few decided cases construing that constitutional provision.

2. *Whether the diversion constituted a taking of the property of the complainant states in violation of the Fifth and Fourteenth Amendments to the United States Constitution.*

The states of Wisconsin, Michigan, Minnesota, Ohio, New York and Pennsylvania, in their bills of complaint, sought no money damages from the state of Illinois or the Sanitary District of Chicago for losses suffered by the lake states and their peoples due to the artificial lowering of the levels of the Great Lakes by reason of the Chicago diversion. The relief demanded was an injunction. Nevertheless, it was contended by complainants that the diversion of the Waters of Lake Michigan through the Chicago Drainage Canal with the resultant lowering of the levels of all the Great Lakes (except Lake Superior) constituted a taking of the property of the complainant states without due process or just compensation in violation of the Fifth and Fourteenth Amendments to the United States Constitution. If the lake states were right in believing that action of Illinois and the Sanitary District violated the Fifth and Fourteenth Amendments to the Federal Constitution, it is manifest that the court would issue an injunction to enjoin the unlawful diversion even though the exact amount of damages were not shown or not claimed, if substantial damages were proven.

The Fifth Amendment to the Constitution of the United States provides:

"No person shall * * * be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation."

Section 1 of the Fourteenth Amendment to the Constitution provides:

"Nor shall any state deprive any person of life, liberty or property without due process of law."

It is an established rule of international law, which the United States recognizes, that independent sovereign states own all of the public domain within their respective boundaries, including all land and water areas within their territorial confines, even though the land therein may be in private ownership.[104]

As one eminent authority[105] points out:

> "A state as a corporate person may possess property, movable and immovable, either within its own limits or beyond them. The territorial property of a state consists of all the land and water within its geographical boundaries, including all rivers, lakes, bays, gulfs and straits lying wholly within them. As incidents to such territorial possessions must be added a state's jurisdiction over marginal waters when its territory abuts upon the sea, and the right of its people to navigate such rivers as form boundaries between two or more states, or such as rising within one state traverse the territories of others on their way to the sea."

When the United States of America became free, independent, and sovereign upon conclusion of the Revolutionary War, Great Britain surrendered to the United States all of her proprietary and territorial rights in and to all of the land and water within the recognized external boundaries of the United States.[106] In the leading case of *Martin v. Waddell,*[107] the United States Supreme Court, in an opinion written by Mr. Chief Justice Taney, said:

> "When the Revolution took place the people of each state became themselves sovereign; and in that character hold the absolute right to all their navigable waters and the soils under them for their own common use, subject only to the rights since surrendered by the Constitution to the general government."

Then, upon admission to the Union of the states of Wisconsin, Michigan, New York, Ohio, Pennsylvania and Minnesota, each state became a constituent member of the United States and was admitted into the union upon an equal footing with the original thirteen states in all respects.[108] As such state, Wisconsin, Ohio, Michigan and others

---

[104] Taylor, International Law, Chap. III, p. 263; 1 Cooley, Constitutional Limitations, 8th ed. p. 4; Hall, International Law, 5th ed. Chap. II, p. 100; 1 Halleck, International Law, Chap. VI, p. 13; Am. & Eng. Ency. of Law, 2d. ed., vol. 16, p. 1133; Wheaton, International Law, Chap. IV, p. 217; Hyde, International Law, vol. I, p. 272; Oppenheim International Law, 3rd ed., par. 172; Glenn, International Law, Par. 34, p. 35; Hudson County Water Co. v. McCarter, 209 U.S. 349 (1908); Georgia v. Tennessee Copper Co., 206 U.S. 230 (1907).

[105] Taylor, International Law, Chap. III, p. 263.

[106] Manchester v. Massachusetts, 139 U. S. 266 (1891).

[107] 16 Peters (U.S.) 367 (1842). Accord: Shively v. Bowlby, 152 U.S. 1 (1894); Weber v. State Harbor Comrs., 18 Wall. 57 (1873); Port of Seattle v. Oregon & Wash. R.R. Co., 255 U.S. 56 (1921).

[108] Pollard v. Hagan, 44 U.S. 212 (1845); Munn v. Illinois, 94 U.S. 113 (1877).

possessed all of the sovereign, proprietary and territorial rights which had been held and exercised by any of the original states, or by any of the states carved out of the Northwest Territory.[109] The complainant states being possessed of all the rights and powers, which before their separation from Great Britain had been exercised by the King and Parliament of England, have complete control over the persons and property within their jurisdiction, subject only to such powers granted to the United States and the powers they are forbidden to exercise by the Constitution of the United States.[110] It is settled law in this country that lands beneath navigable waters within a state belong to the state in its sovereign capacity.[111] The complainant lake states, as sovereign proprietors of all of the public domain within the territorial boundaries of the respective states, have a right to have the waters of the Great Lakes and their connecting waters maintained at their normal and natural level. This is a right of property of which such states may not be dispossessed under the Federal Constitution, except by due process of law. Such a right is subject only to a paramount servitude in favor of Congress to utilize and improve such waters for the purpose of navigation.[112]

It follows that the artificial lowering by the state of Illinois and the Sanitary District of Chicago of the levels of the Great Lakes (except Lake Superior) and the connecting waters between the Great Lakes, constitutes a taking of property of the riparian proprietors (the lake states) thereon within the meaning of the Fifth and Fourteenth Amendments to the United States Constitution.[113]

The constitutional rights of the lake states in this regard are firmly established and neither the Congress of the United States under the Commerce Clause of the Federal Constitution nor the state of Illinois under its police power has any power or authority to injure, impair or destroy the property rights of the lake states or of their citizens and any such action would constitute a violation of the plain provisions of the Fifth and Fourteenth Amendments to the United States Constitution.[114]

Manifestly, had the complainant lake states sought money damages from the defendants, the court could, and properly should, have

---

[109] Art. V, Ordinance of 1787.

[110] Nichols, Eminent Domain, Par. 7.

[111] United States v. Holt State Bank, 270 U.S. 49 (1926); Appleby v. New York, 271 U.S. 365 (1926); Scott v. Lattig, *et al*, 227 U.S. 229 (1913).

[112] Wisconsin v. Illinois, 278 U.S. 367 (1929); United States v. Rouge River Imp. Co., 269 U. S. 411 (1926); Yates v. Milwaukee, 10 Wall. 497 (1871).

[113] Lewis, Eminent Domain, 3rd ed., vol. I, par. 65; Nichols, Eminent Domain, Par. 28; United States v. Rouge River Imp. Co. 269 U.S. 411 (1926).

[114] Cohen v. United States, 162 Fed 364 (1908); Monongahela Navigation Co. v. United States, 148 U.S. 312 (1893); Muggler v. Kansas, 123 U.S. 623 (1887); Archer v. United States, 47 Ct. Cl. 248 (1912); Hayward v. United States, 46 Ct. Cl. 484 (1911).

allowed all provable damages. Having waived their claims for money damages but having shown vast substantial and continuing damages, the complainant lake states were properly entitled to the injunction relief granted by the court.

3. *The Chicago diversion as a violation of the Ordinance of 1787, which forbids the obstruction or impairment of the navigable waters leading into the Mississippi and the St. Lawrence, and the carrying places between the same.*

The Ordinance for the Government of the Northwest Territory of July 13, 1787 provides, in part, that the navigable waters leading into the Mississippi and St. Lawrence and the carrying places between the same shall be common highways and forever free. This provision is still in full force and effect. It has been uniformly held that the provisions of the Ordinance of 1787 established a rule of navigability of navigable waters separate and distinct from the rule applicable at common law.[115] The above principle which was established by that Ordinance was reiterated in later Acts of Congress and accepted by the State of Illinois at the time of her admission into the Union as a state. It is clear that the Ordinance of 1787 forbids the obstruction of these waters by the State of Illinois within the boundaries of the complainant states.

If the waters referred to in the Ordinance of 1787 are to remain common highways, then they cannot be destroyed nor their navigability substantially impaired. And, insofar as the Ordinance of 1787 established common highways in navigable waters capable of bearing commerce from state to state, it is no more subject to repeal by a state than any other regulation of interstate commerce enacted by Congress. The United States Supreme Court has adhered firmly to this policy of preserving the navigable waters in the states carved out of the Northwest Territory.[116]

(j) *Power of Congress to authorize the abstraction of the waters of the Great Lakes to another watershed.*

The one truly important legal problem remaining undecided concerns the power or lack of power of Congress to authorize a diversion of the waters of the Great Lakes to the Mississippi watershed. The lake states contend Congress has no such power. Illinois contends otherwise.

The waters of the Great Lakes and their connecting waters, together with the submerged lands thereunder, are the property of the

---

[115] Huse v. Glover, 119 U.S. 543 (1886); Economy Light & Power Co. v. United States, 256 U.S. (1921).

[116] Economy Light & Power Co. v. United States, 256 U.S. 113 (1921); *In re* Crawford County L. & D. District, 182 Wis. 402 (1924).

littoral states, and their title thereto, regardless of whether it be the full legal title or in trust for their people, is subject only to the paramount right of Congress to regulate navigation as a power implied from the express power to regulate commerce. Since the rights of these states in such waters and submerged lands are proprietary rights, the control of these states thereover must be final and conclusive except in so far as that title is qualified by the legitimate scope of the federal power to regulate navigation.[117]

The power of the United States over navigable streams is implied from its power to regulate interstate commerce.[118] This implied power over navigable waters is limited to their preservation and improvement as avenues of interstate commerce. The right and duty of the United States in relation to navigable waters is a public trust for their preservation and improvement as interstate highways. The power thus granted to Congress by the Commerce Clause does not authorize it to regulate in order to create something else which it prefers to regulate or to attempt to improve the health of the people of a particular locality.[119]

When the United States was settled, the colonists brought to this country the common law of England. That common law prevailed in full force and effect at the time of the adoption of the constitution. The existence of that common law was taken for granted by the framers of the constitution, and the constitution was adopted and must be construed in relation to the rights, privileges and limitations which existed by virtue of the common law, and upon which common law rights the constitution, upon its adoption, was superimposed. This has many times been recognized by the Supreme Court. In *Kansas v. Colorado*,[120] the court said:

> "It is undoubtedly true that the early settlers brought to this country the common law of England, and that the common law throws light on the meaning and scope of the Constitution of the United States, and is also in many States expressly recognized as of controlling force in the absence of express statute. As said by Mr. Justice Gray in *United States v. Wong Kim Ark.*, 169 U. S. 649, 654:
>
> > "'In this, as in other respects, it must be interpreted in the light of the common law, the principles and history of which were familiarly known to the framers of the Constitution. *Minor v. Happersett,* 21 Wall. 162; *Ex parte Wilson,* 114 U. S. 417, 422; *Boyd v. United States,*

---

[117] Illinois Central Railroad Company v. Illinois, 146 U.S. 3387 (1892); Shiveley v. Bowlby, 152 U. S. 1 (1894); Port of Seattle v. Oregon, etc., 255 U. S. 56 (1921).

[118] Gibbons v. Ogden, 9 Wheat 1 (1824).

[119] Wisconsin v. Illinois, 278 U. S. 367 (1929).

[120] 206 U. S. 46 (1907), at pp. 94-95.

> 116 U. S. 616, 624, 625; *Smith v. Alabama,* 124 U. S. 465. The language of the Constitution, as has been well said, could not be understood without reference to the common law, I Kent. Com. 336; Bradley, J., in *Moore v. United States,* 91 U. S. 270, 274.' "

When the constitution was adopted, and the express power given to Congress to regulate commerce, the right to abstract the waters of a watershed had never been claimed and much less recognized. This fact is readily determined by any study of the common law in England as it existed at the time when the constitution was adopted, or since that time.[121] The power granted to Congress under the Commerce Clause was merely the power to appropriate all the waters of a navigable waterway for an avenue of commerce along such natural highway including the natural extensions thereof, together with the right to improve that natural highway in its natural basin without regard to any incidental injury therefrom; but there was never included within the grant of power the right to destroy the natural navigable waters for the purpose of attempting to improve the health, the sanitation facilities, the disposal of sewage, or the development of power of a particular community. The states which border on the Great Lakes were settled because of the existence of these resources, and the states themselves then enlarged and enhanced the gifts of nature within their boundaries. Citizens of these states settled and established themselves within their borders because the natural resources contained therein appealed to them.

It is not too much to say that the whole industrial and commercial structure of the United States has been built about the existence of two great waterways separated by the Continental Divide, opening interstate and international communication by the St. Lawrence on the one hand and the Mississippi on the other. Each has its natural advantages. In the basin of each of these waterways, vast populations have built up their social and industrial institutions to use to the maximum these natural advantages. An intense but constitutionally restrained rivalry exists between the two sections and the dominant character of their respective civilizations has been determined, throughout the past one hundred years, as much by their respective advantages as by their common advantages. That the natural advantages of the Great Lakes region should now be sacrificed to the alleged sanitation or power needs of Chicago or to the improvement in the navigable depths of the Mississippi or to an attempt to ameliorate a simulated or grossly exaggerated health problem, would be at variance with the just expectations of the Great Lakes States and their peoples, who have settled the Great Lakes

[121] Odgers, Common Law of England, Vol. 1, pp. 590-594.

region and built it into an efficient and magnificent industrial empire. To question these just expectations would be grossly inequitable, and as has been observed, there is no express language in the Constitution which requires the implication of any such power.

The citizens of the Great Lakes states settled there because of the existence of certain natural advantages, such as climate, soil, and nearness to a large body of water. Surely neither these settlers nor the framers of the Constitution ever thought for one moment that any of these natural resources might at any time be taken away from those who settled in proximity to them and developed and made use of them, for the benefit of individuals who had chosen to locate in another watershed. The founding fathers never dreamed that one day a power given to Congress by the Constitution only by implication would permit a temporary majority in Congress to take away entirely or impair the natural resources in one state for the benefit of people residing in another. Congress has no more right to take the water which is the property of the complainant states, to their damage, and give it to Illinois or the Sanitary District of Chicago for sanitation or power purposes, than Congress would have to authorize Illinois to appropriate the forests or mineral resources of Wisconsin for the benefit of Illinois or a municipal agency of that state. The theory that Congress has no power to authorize the abstraction of the waters of one watershed to another to the injury of the former does not conflict with nor challenge any of the decisions of the United States Supreme Court with reference to the power of Congress to improve navigable waters of the United States. The constitutional power of Congress over navigable waters extends only to improvement of the navigability of waterways and does not extend to their destruction or serious impairment, nor to the use of Congressional authority over navigable waters for the sanitation or power desires of Illinois or the Sanitary District. Any action by Congress under the Commerce Clause must bear some direct and reasonable relation to the ends of navigation. As the Court pointed out in *Wisconsin v. Illinois,*[122] in speaking of the power of the Secretary of War:

> "The normal power of the Secretary of War under Section 10 of the Act of March 3, 1899, is to maintain the navigable capacity of Lake Michigan and not to restrict it or destroy it by diversion."

While Congress, as the Supreme Court has often said, may adopt any means having a direct relation to the control of navigation, not

[122] 278 U.S. 367 (1929).

otherwise at variance with the Federal Constitution,[123] Congress may not arbitrarily destroy or impair the rights of riparian owners by legislation which has no real or substantial relation to the regulation of navigation.[124] Thus, a diversion of water from Lake Michigan for power or sanitation purposes, even by authority of Congress, would be in violation of the rights of the Lakes States and their peoples. Congress itself would have no such power under the Commerce Clause to make a valid grant of authority to Illinois for any inadmissible purposes. In the same way, any action by Congress resulting in the destruction or serious impairment of the navigable capacity of the Great Lakes through diversion of water at Chicago to aid in the enrichment of an artificial channel in another watershed would be unconstitutional and void.

(k) *Discussion of cases sometimes cited as establishing the power of Congress to authorize the abstraction of waters from one watershed to another.*

A review of the cases which have been cited as establishing the power of Congress to authorize the diversion and destruction of the navigable capacity of navigable waters of the United States is in order. Plainly they do not sustain, but refute, such contentions as to the power of Congress.

Pennsylvania v. Wheeling Bridge Co.[125] involving nothing more than the exercise of the familiar power of Congress under the Commerce Clause *reasonably* to balance the convenience of two forms of interstate commerce, that is, interstate commerce by railroad and highway over bridges across navigable streams, and interstate commerce by water upon such navigable streams. The case did not involve any power of Congress to destroy the navigable capacity of a navigable stream for any purpose and much less for a purpose unrelated to and not falling within the movement of interstate commerce. The fact that it was held in *Gibbins v. Ogden,*[126] that regulation of navigable waters comes by implication within the Federal power under the Interstate Commerce Clause did not make commerce by water necessarily predominant over every other form and avenue of interstate commerce; that is, it did not mean that interstate commerce by water was entitled to be free of every inconvenience which might be occasioned by the crossing of the navigable waters by interstate commerce by land, even though the resulting burden upon interstate commerce by land would far outweigh any

[123] United States v. Chandler-Dunbar Co., 229 U.S. 53, 62 (1913).
[124] Port of Seattle v. Oregon & Washington R.R., 255 U.S. 56, 63 (1921); United States v. River Rouge Imp. Co. 269 U.S. 411 (1925).
[125] 59 U.S. (18 How.) 421 (1856).
[126] 9 Wheat 1 (1824).

inconvenience which would otherwise result to interstate commerce by water. Every time the Federal Government regulates the height of a bridge and the width of the spans over a navigable stream, it is merely exercising its power reasonably to balance the claims of two forms and methods of interstate commerce; that is, commerce by water and the important interstate commerce which may be moving by motor or train across the river by bridge. The question in each case is to what extent interstate commerce by water shall be burdened (not destroyed) for the benefit of interstate commerce by land and *vice versa.* The power to balance the sometimes conflicting claims of the two forms of interstate commerce does not touch the question of the alleged power to destroy the navigable capacity of a navigable stream by diverting it into another watershed even for another navigation route and much less for a purpose unrelated to interstate commerce.

The Wheeling bridge was a little too low to provide clearance for the stacks of the largest steamers at all stages of water without taking down a length of their stacks, which was not uncommon in that day, when bridge clearances were less adequate than now (see First Wheeling bridge case, *Pennsylvania v. Wheeling Bridge Co.*[127]); and the Congress simply balanced this inconvenience against not only the economic loss but the complete disruption of interstate commerce by land, which would have been involved in a destruction of the bridge. Manifestly, the case lends no support to the claim advanced by the Chicago Sanitary District.

South Carolina v. Georgia[128] in no sense involved a diversion from the watershed of a navigable stream or the destruction of its navigable capacity. It involved the not uncommon situation where a navigable stream separates for a short distance into two channels so that neither channel has the usefulness commensurate with the general navigable capacity of the river; and when an improvement is made, it is necessary to select one channel or the other, just as it is necessary to select some part of the single channel of the stream when it is sought to provide an improved channel. That the case does not support the defendants is plain from the statement of the court at page 11, reading as follows:

> "* * * The action of the defendants is not, therefore, the destruction of the navigation of the river. True, it is obstructing the waterway of one of its channels, and compelling navigation to use the other channel; but it is a means employed to render navigation of the river more convenient — a mode of improvement not uncommon. The two channels are not two

[127] 54 U.S. (13 How.) 518 (1852).
[128] 93 U.S. 4 (1876).

> rivers, and closing one for the improvement of the other is in no just or legal sense destroying or impeding the navigation."

Missouri v. Illinois[129] was a suit to enjoin the State of Illinois and the Sanitary District of Chicago from discharging sewage through an artificial channel into the Illinois River so that the effluent would eventually by carried down the Mississippi River past the city of St. Louis. No question of impairment of navigable capacity by reason of any diversion from the Great Lakes was rasied or considered. Indeed, Missouri could not have raised such a question because the diversion, insofar as it affected Missouri waters at all, was beneficial to navigation by increasing their navigable depths, as Missouri claimed in subsequent litigation when she sought to preserve the diversion. The only point made with reference to the diversion was that since the City of Chicago was not in the natural watershed of the Mississippi River, there was no right to dispose of Chicago's sewage into that watershed and that contention did not depend upon whether the sewage was transported into the Mississippi watershed by other means such as pumping it undiluted over the divide. Manifestly, this presented no question of the power of Congress or of Illinois to divert water from the Great Lakes to the impairment of their navigable capacity. That the question merely involved the right to discharge the sewage into the Mississippi watershed is plain from the language of Mr. Justice Holmes upon which defendants rely, as follows:[130]

> "Some stress was laid on the proposition that Chicago is not on the natural watershed of the Mississippi, because of a rise of a few feet between the Desplaines and the Chicago Rivers. We perceive no reason for a distinction on this ground. The natural features relied upon are of the smallest. And if under any circumstances they could affect the case, it is enough to say that Illinois brought Chicago into the Mississippi watershed in pursuance not only of its own statutes, but also of the acts of Congress of March 30, 1822, c. 14, 3 Stat. 659, and March 2, 1827, c. 51, 4 Stat. 234, the validity of which is not disputed. *Wisconsin v. Duluth*, 96 U. S. 379. Of course these acts do not grant the right to discharge sewage, but the case stands no differently in point of law from a suit because of the discharge from Peoria into the Illinois, or from any other or all other cities on the banks of the stream."

It is also illuminating to note the following comment by Mr. Justice Holmes in the subsequent case of *Sanitary District v. United States*, to-wit:[131]

---

[129] 200 U.S. 496 (1901).
[130] 200 U.S. 496 (1901) at p. 526.
[131] 266 U.S. 405 (1925) at p. 427.

> "The defendant in the first place refers to two acts of Congress: one of March 30, 1822 * * * and another of March 2, 1827 * * * referred to, *whether hastily or not* in *Missouri v. Illinois,* 200 U. S. 496, 526, as an act in pursuance of which Illinois brought Chicago into the Mississippi watershed."

Of course it is a complete answer to the contention based upon *Missouri v. Illinois,*[132] that these identical statutes and that very decision were urged to constitute authority for the diversion in *Wisconsin v. Illinois,*[133] and that an unanimous court, which incuded Mr. Justice Holmes, held that they were no authority whatsoever.

The claim has also been made that *Sanitary District v. United States,*[134] holds that Congress has power to authorize the diversion of water from one watershed to the other notwithstanding the impairment of navigable capacity. Of course, the case presented the exact antithesis of whether Congress could authorize a diversion from a navigable stream to the impairment of its navigable capacity. The only question there was whether, as against a State, Congress could prohibit a diversion from a navigable stream which would impair its navigable capacity. The relief sought was in strict conformity with the trust of Congress to preserve and improve the natural navigable waters entrusted to its care; and the court held that it had that power. The injunction in that case was granted "without prejudice to any permit that may be issued by the Secretary of War *according to law.*" The defendants in *Wisconsin v. Illinois, supra,* contended that that was a recognition both of the power of Congress and of the Administrative Officers to authorize such diversion. But the contention was in vain.

In *Wisconsin v. Illinois*[135] it was vigorously urged upon the court, on the one hand, that Congress was without power to authorize a diversion from the Great Lakes watershed in an amount which would substantially impair the navigable capacity of the Great Lakes System, and on the other hand, that Congress possessed and had exercised such power; but the court found it unnecessary and declined to decide that grave constitutional question. Mr. Chief Justice Taft, speaking for an unanimous court, stated the contentions of the parties and the view that they need not all be decided, in the following language:[136]

> "* * * Defendants assert that such a diversion is the result of Congressional action in the regulation of interstate commerce, that the injury, if any, resulting is *damnum absque injuria* to

---

[132] 200 U.S. 496 (1901).
[133] 278 U.S. 367 (1929).
[134] 266 U.S. 405 (1925).
[135] 278 U.S. 367 (1929), at p. 410.
[136] 278 U. S. 367, 410 (1929).

the complaining States. Those States reply that the regulation of interstate commerce under the Constitution does not authorize the transfer by Congress of any of the navigable capacity of the Great Lakes System of Waters to the Mississippi basin, that is, from one great watershed to another; second, that the transfer is contrary to the provisions of the Constitution forbidding the preference of the ports of one State over those of another; and third, that the injuries to the complainant States deprive them and their citizens and property owners of property without due process of law and of the natural advantages of their position, contrary to their sovereign rights as members of the Union. If one of these issues is decided in favor of the complaining States, it ends the case in their favor and the diversion must be enjoined. But in the view which we take respecting what actually has been done by Congress some of these objections need not be considered or passed upon.

"The complainants, even apart from their constitutional objections, contend that Congress has not by statute or otherwise authorized the Lake Michigan diversion, that it is, therefore, illegal and that the injuries by it to the complainant States and their people should be forbidden by decree of this court."

In disposing of the case, Mr. Chief Justice Taft said:[137]

"The normal power of the Secretary of War under Section 10 of the Act of March 3, 1899, is to maintain the navigable capacity of Lake Michigan and not to restrict it or destroy it by diversion."

And again:[138]

"* * * Merely to aid the District in disposing of its sewage was not a justification, considering the limited scope of the Secretary's authority. He could not make mere local sanitation a basis for a continuing diversion."

* * *

"* * * It may be that some flow from the Lake is necessary to keep up navigation in the Chicago River, which really is part of the Port of Chicago, but that amount is negligible as compared with 8,500 second feet now being diverted. Hence, beyond that negligible quantity, the validity of the Secretary's permit derives its support entirely from a situation produced by the Sanitary District in violation of complainants' rights; and but for that support complainants might properly press for an immediate shutting down by injunction of the diversion, save any small part needed to maintain navigation in the river."

And further:[139]

"* * * And in so far as the prior diversion was not for the purposes of maintaining navigation in the Chicago River, it was without any legal basis, because made for an inad-

[137] Ibid., p. 417.
[138] Ibid., p. 418.
[139] Ibid., p. 420.

> missible purpose. It therefore is the duty of this Court by an appropriate decree to compell the reduction of the diversion to a point where it rests on a legal basis and thus restore the navigable capacity of Lake Michigan to its proper level."

To appreciate the scope of this decision it is necessary to keep in mind that the defendants, the State of Illinois and the Sanitary District of Chicago, and intervening Mississippi Valley States insisted that the diversion was essential to the maintenance and development of the Lakes to Gulf Waterway; that the Panama Canal had seriously injured the industrial welfare and development of the entire Mississippi Valley; that the maintenance and improvement of the Lakes to Gulf Waterway was essential to prevent ruinous injury to the Mississippi Valley; that the navigable depths in the Illinois Waterway, being constructed by the State of Illinois from the end of the Drainage Canal through the Des Plaines River to the Illinois River, depended upon the maintenance of the diversion; that from 1.2 feet to 5 feet of the navigable depths in the Illinois River, a Federal navigation project, was supplied by the diversion; that the diversion enriched navigable depths in the Mississippi River as far as St. Louis, somewhere between 1 and 2 feet; that the Inland Waterways Corporation claimed the diversion was essential to its practical operations on the Mississippi River; and that the Special Master found it was not controverted that the Secretary of War had these considerations before him on the application and hearing which resulted in the issuance of the permit under which the defendants sought to justify the diversion. The reference to the possible necessity for a negligible diversion to preserve navigation in the Chicago River should not be confused with any diversion to create an artificial waterway or to enrich the navigable capacity of another watershed. The Chicago River is part of the Port of Chicago on the Great Lakes, and as such possible negligible diversion was solely for the purpose of preserving the navigable capacity of the Port of Chicago as part of the Great Lakes System and was limited to an amount which would not impair the navigable capacity of the Great Lakes System. In *Wisconsin v. Illinois*[140] the defendants again urged that the diversion had been authorized by the Congress; and the Court, speaking through Mr. Justice Holmes, said at page 197:

> "* * * These requirements as between the parties are the constitutional rights of those states, subject to whatever modification they thereafter may be subjected to by Congress acting within its authority. It will be time enough to consider the scope of that authority when it is exercised."

---

[140] Wisconsin et. al. v. Illinois et. al., 281 U.S. 179 (1930).

Here again the Court refused to decide whether such power rested in the Congress.

Wisconsin v. Illinois came before the Supreme Court a third time in 1933.[141] The defendants and also the Mississippi Valley States (which had attempted again to intervene) contended that the Rivers and Harbors Act of July 3, 1930, and the pending Great Lakes-St. Lawrence Waterway Treaty with Canada constituted an assumption of control over the diversion by the Congress and required a modification of the decree. The Court, in pointing out that simliar contentions had been urged by the defendants throughout the litigation, said in part:[142]

> "In this suit, the State of Illinois has defended from the beginning upon the ground that diversion was essential with reference not only to the needs of sanitation but also for a continuous waterway from the Lake to the Gulf. Wisconsin v. Illinois, supra, pp. 388, 396. But the Court found this contention unavailing and that the existing diversion was unlawful."

Again the Court held that the Congress had not attempted to modify the diversion as fixed by the terms of the Supreme Court degree, and found it unnecessary to pass upon the power of Congress to do so.

Arizona v. California,[143] did not involve any question of a diversion which would destroy the navigable capacity of a navigable stream. Under the Western Law of Waters, the right to divert water for irrigation and municipal purposes to another watershed has prevailed ever since the Spanish days. That right is, of course, subject to the limitation that such diversion may not be made to an extent which substantially impairs the navigable capacity of navigable waters.[144] The contentions of Arizona were: first, that the Colorado River was not navigable at all and that hence the Federal Government had no power to engage in the project; and second, that the terms of the Act would prevent Arizona from securing its fair share of the waters of the river for irrigation and municipal purposes. On the facts alleged in the Bill and the facts of which the Court took judicial notice, it appeared that the Colorado River was a navigable water of the United States; that the project would improve its navigable capacity; that the storage waters would largely consist of flood waters otherwise going to waste and would provide a large surplus above that available under natural conditions for irrigation and municipal uses; that nothing in the Act and nothing which had been done under the Act prevented Arizona from exercising its full rights of

---

141 289 U.S. 395 (1933).
142 289 U.S. 395, 401 (1933).
143 283 U.S. 423 (1931).
144 United States v. Rio Grande Dam and Irrigation Co., 174 U.S. 690 (1899).

appropriation; and that unless and until there should be an interference or threatened interference with Arizona's rights of appropriation for irrigation and other purposes, there was no cause of action, and the Bill was dismissed without prejudice.

(1) *Comments on the legal questions raised in the Chicago Water Diversion litigation.*

While the legal issues raised and considered in the litigation brought by the Great Lakes States covered a wide field, the exact issue was whether the State of Illinois and the Sanitary District of Chicago, by diverting permanently 8500 cubic feet per second of water from Lake Michigan through the Chicago Drainage Canal under authority of a Permit issued by the Secretary of War under date of March 5, 1925, with the resultant lowering of lake levels, so injured the riparian and other rights of the complainant states bordering on the Great Lakes as "to justify an injunction to stop this diversion and thus restore the normal levels" of such lakes.

In the last analysis, the main defense of Illinois and the Chicago Sanitary District centered about the validity of the Permit issued by the Secretary of War under date of March 3, 1925. The United States Supreme Court held that the Permit of the Secretary of War dated March 3, 1925 was invalid because: "Merely to aid the District in disposing of its sewage was not a justification, considering the limited scope of the Secretary's authority. He could not make mere local sanitation a basis for a continuing diversion".[145]

The Court in deciding the rights of the several states involved in the controversy manifestly applied the common law of waters in determining the right and uses which the states bordering upon the Great Lakes may make of the waters of such lakes, particularly in the situation where the appropriation of the water from Lake Michigan involved a permanent loss of such water to the Great Lakes-St. Lawrence watershed. The Court also considered briefly the power and function of the Secretary of War under authority conferred by Congress under the Commerce Clause of the United States Constitution with respect to navigable waters of the United States. The Court found it unnecessary to rule upon many of the interesting and complex constitutional questions raised in this litigation. A final and authoritative determination of the important question relative to the power of Congress to authorize a permanent diversion of large quantities of water from the Great Lakes-St. Lawrence watershed to the Mississippi watershed must await some future decision by the United States Supreme Court.

---

[145] Wisconsin et al. v. Illinois et al., 278 U.S. 367, at p. 418 (1929).

PART THREE

THE CHICAGO WATER DIVERSION CONTROVERSY*

HERBERT H. NAUJOKS

PART THREE: WHAT OF THE FUTURE?

(a) *In General*

In Parts One and Two of this article the writer discussed the history and background of the Chicago Water Diversion Controversy, the decisions rendered by the United States Supreme Court, the various rulings of the Governmental officials and Departments, the efforts made in Congress and in the Supreme Court to authorize a large diversion, the present status of the problem, and finally the legal questions that were or still are involved. Almost a half century of litigation and dispute has failed to settle permanently this important problem, and the question arises, "What of the future?". How can this perennial problem be settled once and for all? To attempt to answer this, one must consider not only the rulings of the Court but also the physical and engineering details of the sewage disposal and water supply problems of metropolitan Chicago. Is Chicago really faced with a health, sewage and water supply problem peculiar to this region alone that can be solved only by increased diverison, or is Chicago failing to do what it could and should do to overcome this problem? These and other details and questions, together with suggestions for a permanent solution, will be considered in the following pages of this article.

(b) *Physical details concerning the Great Lakes-St. Lawrence System, The Illinois Waterway (Including the Chicago Drainage Canal), and diversion from Lake Michigan.*

1. *General Description of the Great Lakes-St. Lawrence System, the Chicago Drainage Canal, the Illinois Waterway and Adjacent Areas.*

The Great Lakes-St. Lawrence system is a great natural waterway and highway of commerce consisting of Lake Superior, St. Mary's River, Lake Michigan, Lake Huron, St. Clair River, Lake St. Clair, Detroit River, Lake Erie, Niagara River, Lake Ontario and the St. Lawrence River. This system constitutes the largest inland commercial highway in the world, with freight rates on water-borne cargo that are astonishingly low.[146] This waterway in its natural state was navigable and its navigable capacity has been improved by local,

*This is the third in a series of three articles on this subject. The first appeared in the December issue of the Review; the second appeared in the February issue.

[146] Report of Engineering Board of Review to the Sanitary District of Chicago (1925), Part II, p. 66.

Federal and Canadian agencies. In a state of nature all of the waters of this system discharged eastward through the St. Lawrence River into the Atlantic Ocean. With the exception of Lake Michigan, which lies wholly within the United States, this waterway from the head of Lake Superior to the point where the St. Lawrence River crosses the 45th parallel of latitude, constitutes the international boundary between the United States of America and the Dominion of Canada. The waters of these lakes extend about 760 miles from east to west, and 545 miles from north to south. There are about 400 harbors on the Great Lakes and connecting channels.[147]

The length of shoreline of the several states upon the various lakes and connecting waters of the Great Lakes-St. Lawrence system from the head of Lake Superior to the point where the St. Lawrence River ceases to be a part of the international boundary is as follows: Minnesota, 186 miles; Wisconsin, 673 miles; Michigan, 2391 miles; Illinois, 60 miles; Indiana, 40 miles; Ohio, 251 miles; Pennsylvania, 55 miles; New York, 689 miles. Canada has a shoreline of 3772 miles bordering on the Great Lakes-St. Lawrence system as compared to a total of 4345 miles for the United States.

The total land area of the Great Lakes-St. Lawrence drainage basin is 202,910 square miles, of which only 715 square miles lie within the state of Illinois. In a state of nature the mean annual contribution of the state of Illinois to the net water supply of the Great Lakes was 503 cubic feet. Under the United States Supreme Court decree of April 21, 1930, the State of Illinois abstracts from the Great Lakes system 1,500 cubic feet per second, plus 1,700 cubic feet per second of domestic pumpage (for drinking, washing and other household and industrial uses) a total of 3,200 cubic feet per second.

The areas of the drainage basins of the various lakes in the Great Lakes system, in both the United States and Canada, including land and water surfaces, expressed in square miles, is as follows: Lake Superior (including St. Mary's River above Falls) 80,700 square miles; Lake Michigan, 69,040 square miles; Lake Huron (including St. Mary's River below St. Mary's Falls, North Channel and Georgian Bay), 72,600 square miles; Lake St. Clair (including St Clair River) 6,420 square miles; Lake Erie (including Detroit River), 34,680 square miles; Lake Ontario (including Niagara River and St. Lawrence River to Galop Rapids), 34,640 square miles. The total area of the drainage basin of the Great Lakes in the United States and Canada, as aforesaid (including land and water surfaces, is 298,080 square miles.

---

[147] Report of Special Master Hughes, Nov. 23, 1927, p. 107.

The total area of the water surfaces of the various Great Lakes are divided as follows: Lake Superior (including St. Mary's River above Falls), 31,820 square miles; Lake Michigan, 22,400 square miles; Lake Huron (including St. Mary's River below Falls, 23,010 square miles; Lake St. Clair and River, 460 square miles; Lake Erie, 9,940 square miles; and Lake Ontario, including Niagara River and St. Lawrence River to Galop Rapids, 7,540 square miles.

Navigation on the Great Lakes dates back to the bateaux of the early voyageurs. This type of traffic was followed by the small sailing vessel of a few tons. In time, the size was gradually increased to a thousand tons or more. With the advent of the steam vessel more than a century ago following Fulton's invention, tug-boats were developed to facilitate the passage of sailing vessels through connecting rivers. From these tug-boats developed the steam barge of considerable cargo capacity, capable of towing one or more consorts. Then followed the modern grain and ore carrier of about 3,000 tons which has grown by leaps and bounds to the present huge freight carrier of 12,000 to 14,000 tons. And, in this time, the draft of the boats has been increased from a few feet to about 26 feet for the larger boats.

Closely tied in with the improvement of the huge bulk Great Lakes carrier was the improvement of harbors and connecting channels, the building of locks and the cutting of canals. In their natural state, these Great Lakes harbors and channels were much too shallow. Boats of a deeper draft than 5 feet could not pass from Lake Huron to Lake Erie, and a portage had to be made from the St. Mary's River to Lake Superior. Nor could boats with a draft of more than 5 feet enter the inner harbors of most of the Port cities on the Great Lakes. This necessitated the deepening of channels in the various harbors and connecting waters and channels. For more than a hundred years, improvements have been made by dredging in earth, blasting through rock and building break-waters and the like. These improvements have been undertaken by the United States and Canada, by local municipalities and by private interests. Many hundreds of millions of dollars have been spent to date in making such improvements. For a time the controlling depth of these improvements was 12 feet, then 14, then 16, and later, 20 feet. Now the channels in some harbors have been deepened to 24 or 25 feet and ultimate increase to 30 feet is in contemplation. The importance of deep waters is related to the carrying capacity of the lake carriers. Most of the huge lake freight can be loaded to a 24 or 26 foot draft, assuming the depth of water in the harbors and connecting channels is sufficient to permit such loading. Each inch of draft permits the vessels to carry from 80 to 100 tons of cargo. Thus, a large lake car-

rier loaded to a 24 foot draft will carry from 3840 to 4800 tons more of cargo than a similar carrier loaded only to a 20 foot draft. The savings to consumers on the Great Lakes in transportation charges on items carried by boat is directly dependent upon the cargo load carried by the lake freighters. It is obviously more economical to carry a full load of cargo by loading the vessel to the full available draft than for the boat to carry only one-half or two-thirds of a full load.

2. *Description of the Illinois Waterway, the Chicago Drainage Canal and the Calumet River.*

The continental divide separating the drainage basins of the Great Lakes-St. Lawrence system and the Mississippi River system, in the vicinity of Chicago, in the state of Illinois, passes about 10 miles west of the southwestern end of Lake Michigan and was, in a state of nature, about 10 or 11 feet above the mean level of Lake Michigan.[148]

The Chicago River is a small bifurcated stream, lying in the State of Illinois. The main channel of the Chicago River extends westward from Lake Michigan, in the City of Chicago, about one mile and is formed by the junction of the north branch of the Chicago River and the south branch of the Chicago River. The north branch of the Chicago River flows in a southerly direction, parallel and near to the shore of Lake Michigan; the south branch flows in a northerly direction, parallel and near to the shore of Lake Michigan. The south branch unites with the Chicago Drainage Canal near Damen Avenue (also known as Robey Street in the city of Chicago). In a state of nature, the Chicago River and all of the waters of its drainage basin, flowed into Lake Michigan and contributed to the water supply of the Great Lakes-St. Lawrence system.

The Little and Grand Calumet Rivers rise in the state of Indiana and flow in a westerly direction across the boundary line between the states of Indiana and Illinois. After entering the state of Illinois, these rivers curve sharply to the north and east and empty into Lake Michigan. The Little Calumet River is the larger of the two streams. In a state of nature, all of the waters of the Little and Grand Calumet Rivers, and the waters of their drainage basins, flowed into Lake Michigan and contributed to the water supply of the Great Lakes-St. Lawrence system.

The Calumet-Sag Channel is 76 miles long and extends westerly from the Little Calumet River near Blue Island through a depression in the Lake Michigan-Des Plaines River divide, the Calumet-Sag Valley, and joins the main drainage canal at Sag, about 15 miles up-

[148] Report of Special Master Hughes, Nov. 23, 1927, p. 10.

stream from Joliet, and about 23 miles from Lake Michigan. About three miles east of the Illinois-Indiana state line, the Indiana Harbor Ship Canal has been cut from the Calumet River to Lake Michigan at East Chicago. The Burns Ditch (opened in 1925) taps the upper reaches of the Little Calumet River in Indiana and drains about one-half of its flow directly into Lake Michigan at Dune Park, about eight miles east of Gary, Indiana.

The Des Plaines River is a small stream rising in southern Wisconsin and flowing in a southerly direction parallel and near to the shore of Lake Michigan until it reaches a point about due west of the mouth of the Chicago River where it turns sharply to the southwest and joins with the waters of the Kankakee to form the Illinois River, which is a tributary of the Mississippi River. At the point where the Des Plaines River turns to the southwest the bed of the stream is about 10 feet above the level of Lake Michigan. In a state of nature when the Des Plaines River was in flood, a large portion of its flood waters poured over the divide and into the Chicago River basin and thence passed into Lake Michigan. Such flood waters of the Des Plaines River constituted, in a state of nature, a part of the water supply of the Great Lakes-St. Lawrence system.

The Illinois Waterway extends from Lake Michigan at Chicago to the Mississippi River at Grafton, Illinois, a distance of approximately 327 miles. It comprises the Chicago River, the Chicago Drainage Canal (the artificial channel constructed by the Sanitary District of Chicago) and the Des Plaines and Illinois Rivers. The Canal Section of the Illinois Waterway extends from the Chicago River at Damen Avenue (sometimes called Robey Street) which is about six miles from Lake Michigan, And extends thence 32 miles to Lockport, Illinois. Two miles west of Lockport the Chicago Drainage Canal connects with the Des Plaines River. From Chicago Harbor to Lockport the channel is generally 160 feet wide and 24 feet deep. Further south, the DesPlaines River is joined by the Kankakee River and becomes known as the Illinois River. From just below Lockport (a distance of approximately 290 miles), to Grafton, Illinois, on the Mississippi River, the Illinois Waterway is generally 300 feet wide and nine feet deep. At the mouth of the Chicago River, a controlling works and lock were installed (in 1936) to prevent reversals of flow in times of heavy rains into Lake Michigan.

A small lock was constructed at the west end of the main Drainage Canal at Lockport to make connection with the old Illinois and Michigan Canal, thus rendering superflous all of that portion of this old canal between Lockport and Chicago.

The upper Illinois River extends westerly from the Des Plaines-Kankakee junction about 43 miles to Utica, which is about 100 miles

by water from Lake Michigan. The lower Illinois River extends southwesterly about 230 miles from Utica to Grafton, where the Illinois River empties into the Mississippi River. In this alluvial reach of the Illinois River, the fall of the water surface is approximately 33 feet. Between Lockport (4 miles above Joleit and 36 miles from Lake Michigan) and Utica, the fall of the water surface in the Des Plaines and Illinois Rivers is about 136 feet in a distance of 64 miles.

A series of dams and locks with resulting pools above the dams have been constructed in the Illinois Waterway in order to assist navigation by eliminating rapids in the stream. In the order in which they are approached from Chicago, these are situated at Lockport (36 miles), Brandon Road Pool (41.2 miles), Dresden Island (55.7 miles), Marseilles (80.2 miles), Starved Rock (96 miles), Peoria (169.4 miles), LaGrange (247 miles), and below Grafton at Alton (340 miles).[149] At the time of the entry of the 1930 decree by the United States Supreme Court, the Lockport dam and pool were in existence. The others were completed later. The Illinois Waterway carries an immense traffic on barges and small boats; coal, stone, building materials, cement, oil, machinery and the like constitute the bulk of the freight. In 1944, the total tonnage carried on this waterway exceeded seven million tons.

In a state of nature the Chicago River flowed into Lake Michigan and contributed to the water supply of the Great Lakes-St. Lawrence system. In a state of nature the Little and Great Calumet Rivers flowed into Lake Michigan and contributed to the water supply of the Great Lakes system.

In a state of nature part of the flood waters of the Des Plaines River spilled over the Continental Divide near Chicago and constituted a part of the water supply of the Great Lakes-St. Lawrence system. Under natural conditions all of the waters of the Great Lakes-St. Lawrence system discharged eastward through the St. Lawrence River into the Atlantic Ocean.

(c) *The Changes Produced by the Chicago Diversion and the Damages Sustained by the Lake States because of such Diversion.*

During the period from 1892 to 1900, as has been noted hereinbefore, the Sanitary District of Chicago, acting as an agency of the State of Illinois, cut through the Continental Divide between the Mississippi watershed and the Great Lakes-St. Lawrence watershed at Chicago by constructing a channel from the west fork of the South Branch of the Chicago River near Damen Avenue (also known as Robey Street) in the City of Chicago, to the City of Lockport in

[149] Distances from Lake Michigan.

Will County, Illinois, on the Des Plaines River, for the purpose of carrying the sewage of the City of Chicago into the Des Plaines and Illinois Rivers. On January 17, 1900, the Chicago Sanitary district turned the waters of the Chicago River and of Lake Michigan into this artificial channel, and thereby reversed the current of the Chicago River and commenced the abstraction of the waters of Lake Michigan. Since that date the Chicago River has been continuously reversed by the acts of the Sanitary District of Chicago, and the waters of the Chicago River and a portion of the waters of Lake Michigan have flowed westward into the Mississippi River and thence into the Gulf of Mexico.

Subsequently the Sanitary District of Chicago excavated another artificial channel from the Little Calumet River at a point near Blue Island, Illinois, westerly across the Continental Divide. This second channel, known as the Calumet-Sag Channel, was completed about 1918, and since that time the Little Calumet River has been reversed under normal conditions, so that its waters no longer flow into Lake Michigan but flow westward through the Calumet-Sag Channel into the main Drainage Canal and thence through that canal, the Des Plaines, Illinois and Mississippi Rivers, to the Gulf of Mexico.

Subsequent to January 17, 1900, the quantity of water which has been caused to flow westward from the Great Lakes-St. Lawrence watershed into the Mississippi River through the aforesaid artificial channels, gradually increased until it reached a mean annual maximum of about 10,000 cubic second feet and then fell to an average of approximately 8,400 cubic second feet. Today the diversion of waters of the Great Lakes-St. Lawrence system through the Chicago Drainage Canal is governed by the Supreme Court decree of April 21, 1930 and averages 1,500 cubic feet per second, plus domestic pumpage of 1,700 cubic feet per second, or a total diversion of 3,200 cubic feet per second.

The effect of the Chicago diversion has been to lower the levels of all of the Great Lakes (except Lake Superior) below the levels which would otherwise have existed in a state of nature. This lowering of levels of the Great Lakes has impaired the utility of harbors within the lake states and has also hindered and obstructed navigation on the Great Lakes and connecting waters between such harbors. Such lowering of levels has had a very substantial and injurious effect upon the carrying capacity of lake vessels, and has deprived commercial and navigation interests of the facilities which they would otherwise have enjoyed in commerce. Since the suits instituted by the lake states were not for money damages but for an injunction to enjoin the illegal diversion, no attempt was made to fix precisely the value of the damages suffered by the lake states in

dollars and cents. Nevertheless, the record in those suits discloses that commercial, riparian and navigation interests suffered damages, because of the Chicago diversion, running into millions of dollars.

Experience of the past 40 years has demonstrated that local shipping, riparian and marine interests are damaged by lowered lake levels, in the following particulars:

1. *Damage to docks and wharves.* Most of the docks and wharves in the Great Lakes area are built on wooden piling with timber revetment; some with concrete superstructure, others not. When the lake level is lowered, piling and revetment become exposed and the wood rots. Timber under water will last indefinitely, but exposed timber subjected to damp rots away quickly. As a net result, the concrete superstructure built to protect the timber becomes useless.

In many harbors, at the entrance in the channel maintained by the Federal Government, Congress has spent millions of dollars repairing conditions precisely of that character, where the upper structures were rotted away and had to be replaced. The piling gets down to below the water level and a new superstructure has to be put in. A lowered lake level is primarily responsible for that situation. Hence, a few years of exposure of this character will require that a dock be recapped and possibly rebuilt. Lowering of lake levels, therefore, brings a series of expensive maintenance problems to the dock operators.

Lowering of Lake levels also brings another costly problem to the operators of docks served by package-freight steamers. These steamers, generally speaking, have side parts through which passengers and freight are received and discharged. As lake levels lower, portions of the dock must be cut away and ramps built to equalize the floor of the dock with the dock of the vessel. Adjustments can customarily be made without much expense for seasonal fluctuations, but any substantial reduction in lake levels will necessitate additional expense.

2. *Dredging operations.* Many lake ports have comparatively shallow water next to the shore. This necessitates dredging of ships' channels alongside the wharves. Channels are customarily dredged only deep enough to accommodate current shipping. Lowering of lake levels will, therefore, necessitate additional dredging alongside practically every dock in the Great Lakes district. It is impossible to calculate the exact expense of such dredging, due to the diverse conditions existing, i.e., some ship channels have mud bottom, some mud with sunken logs left from the old lumbering days, some sand bottom, and some impervious clay or "hardpan" — but the cost is considerable.

3. *Reducing* vessels' loadings. The most serious damage to the lake ports, however, would be in the matter of reducing vessels' loadings. The margin of profit in operating a bulk carrier is oftentimes extremely small and financial success depends on the ability to carry substantially a full load. If a ship carrying petroleum products, for illustration, can only load three-fourths to seven-eighths of capacity, because channel entrances are inadequate, due to lowered lake levels, its operation for the season is almost certain to run into a loss.

In order to compete with rail and truck competition, vessels are sometimes loaded to near dangerous drafts and ship captains rely on speed and surge to pull them through, oftentimes scraping bottom.

Any reduction of lake levels that will permanently affect either the Government-maintained channels or privately owned ship channels and docks is a matter of grave concern to the lake states and their peoples.

4. *Damage to Great Lakes commerce.* The findings of Charles Evans Hughes, master in chancery in the case of the *State of Wisconsin et al. v. State of Illinois et al.*,[150] decided by the Supreme Court, January 14, 1929, are of interest on this point. The Court refers to the Special Master's report[151] and then states that:

> "Water-borne traffic on the Great Lakes for the year 1923 consisted of 81,466,902,000 ton-miles of water haul, and that consideration of individual loaded boats and of their respective dimensions shows that if water had been available for an additional 6 inches of draft, the fleet could have handled for the year 3,346,000 tons more than was actually transported. Or, to put the matter in another light, the season's business could have been done with the elimination from service of about 30 freighters of the 2,000- to 3,000-ton class; and that the lost tonnage of the total through business of the Lakes for the year, incident to a 6-inch deficiency of draft, exceeded 4,000,000 tons and that the average water-haul rate for the year was 88 cents per ton".[152]

In an address before the American Association of Port Authorities at Milwaukee in 1930, Gen. E. M. Markham, former Chief of Engineers, United States Army, made this statement:

> "It has been calculated that the ordinary 500-foot ship can carry 2,250 tons more cargo on a draft of 23 feet than on a draft of 20 feet, and that the increased cost of the round trip, by reason of carrying this extra cargo, is but about $100, indicating a saving of about 8 cents per ton. A 600-foot boat carrying about 14,000 net tons on 20-foot draft would carry

[150] 278 U.S. 367.
[151] Report of Special Master Hughes (Nov. 23, 1927).
[152] 278 U.S. U.S. 367 at pp. 408-409.

about 17,000 tons on 23 feet, at added cost of about $123, or a saving on the entire cargo of about 7½ cents per ton.

"Comparing 500-foot boats loaded to 20 feet with the 600-foot class loaded to 23 feet, the added cargo of some 6,200 tons involves an increase in operating charges alone, exclusive of interest, insurance, maintenance, and other items of overhead, of $873. The operating cost in the larger ships at the greater draft is some 14 cents per ton less than for the smaller ships at the present draft. This difference would be reduced somewhat by the inclusion of the somewhat greater overhead charges attaching to the larger vessel."

These findings from eminent authorities conclusively demonstrate that there is a very real damage done commercial shipping on the Great Lakes for every inch the water level is lowered as a result of the diversion of water from the Great Lakes into another watershed.

The extent of that damage is considerable. Gross total of commerce done at Great Lakes ports during the calendar year 1936, according to Annual Report of Chief of Engineers, was 253,476,122 tons. The gross total of all waterborne commerce of the United States, including all Atlantic, Gulf, Pacific coast, and Great Lakes ports, was 757,342,208 tons. In other words, commerce on the Great Lakes aggregated a fraction over one-third of the total United States waterborne commerce at all these ports. For purposes of comparison, a statement of traffic on the Illinois Waterway as found on page 781, volume 2, Annual Report, Chief of Engineers, United States Army, 1937, shows a total tonnage for the year 1936 on this waterway, including Chicago Sanitary District, Calumet Sag Canal, and the southern branch of Chicago River, of 2,048,057 tons. The total tonnage carried on the Illinois Waterway during 1946 was 5,437,000 tons.

5. *Damage to Riparian Owners and Resort Property.* The west bank of Lake Michigan in the state of Wisconsin is lined with bathing beaches and parks where residents and visitors enjoy the healthful waters and beneficial sun. Each year hundreds of thousands of out-of state visitors travel to Wisconsin lured by the attractive shore-line, the beaches and parks. The tourist business is a tremendous source of revenue to the state and its residents. Lowered lake levels on Lake Michigan usually mean an extension of shore-line through recession of the waters of Lake Michigan, leaving an unsightly, unsanitary beach — a breeding place for mosquitoes and snakes. Property values decline, the tourist trade vanishes and damage to riparian property caused by lowered lake levels can run into huge sums of money.

The east bank of Lake Michigan is dotted with a series of almost land-locked lakes encircled by dunes and morainal hills of remarkable scenic attraction. Fanned by the cool breezes that sweep across

Lake Michigan during the summer months, tempered by their 80 miles traverse over cool blue water, this shore is visited annually by millions of vacationists from all parts of the United States seeking relief from midsummer heat. There are substantial investments in summer hotels, cottages, tourist camps, and so forth. In fact, the tourist business means almost as much to a goodly portion of Michigan as it means to Florida and southern California.

These summer properties are located, in a large part, on Lake Michigan and arms thereof. Cottages, boat houses, wharves or boat landings, and other improvements have been placed on these properties with a definite location in respect to the shore line.

In many instances the water is quite shallow. A characteristic condition fringing the shore is a series of bars with deeper water in between. These bars may be spaced from 75 to 200 feet apart. As the lake level is lowered and the water recedes, it may be readily perceived that an awkward and unsatisfactory shore condition results, to the detriment of the property, thereby materially reducing its market value. In the northern part of the State — that is, in the Grand Traverse Bay region and northward, most of the beach is rocky. Lowering of the lake levels from 6 inches to a foot will expose these rocks, or at least bring them close to the surface and make many parcels of property practically valueless from a market standpoint.

It would be difficult to estimate the damage that would result to Michigan resort property as a result of any material reduction of lake levels, but it is safe to assume it would aggregate many millions of dollars.

The conditions above described with respect to riparian property damages due to lowered lake levels in Wisconsin and Michigan apply also to the other lake states, such as Ohio, New York, Pennsylvania and the Dominion of Canada.

The cost of improving and maintaining harbors is increased by the lowering of lake levels, for as former Secretary of War Stimson aptly noted in his 1913 denial of Chicago's petition for increased diversion:

> "In a word, every drop of water taken out at Chicago necessarily tends to nullify costly improvements made under direct authority of Congress throughout the Great Lakes, and a withdrawal of the amount now applied for would nullify such expenditures to the amount of many millions of dollars, as well as inflict an even greater loss upon the navigation interests using such waters."

(d) *Description of the Sewage Disposal Plants and Auxiliary Works Maintained by the Sanitary District of Chicago.*

At the close of the year 1946, the Sanitary District of Chicago had in operation the following units: four sewage treatment plants,

namely, the North Side, Calumet, West Side and Southwest Works, with a combined capacity of 1,258 million gallons daily average flow; two small outlying treatment works, eleven sewage pumping stations with a combined pumping capacity of 7,138 cubic feet per second and about 178 miles of intercepting sewers.[153]

The 449 square miles of area in the Sanitary District of Chicago is divided into four projects for purposes of sewage treatment (North Side project, Calumet project, West Side project, Southwest Side project).

The North Side project covers 115 square miles, north of Fullerton Avenue, Chicago, to the north line of Cook County, and from Lake Michigan to the watershed between the Des Plaines and Chicago Rivers. This project consists of a sewage treatment plant, located at Howard Avenue and the North Shore Channel; the North Branch, Evanston, Golf-Glenview, and Niles Pumping Stations, and about 43 miles of intercepting sewers, extending south from Glencoe through the North Shore towns and Evanston to the treatment plant and extending north from Fullerton Avenue to the treatment plant. The treatment plant is of the activated sludge type, and at present serves a sewered area of 84.5 square miles. The treated effluent is discharged into the North Shore Channel and the waste sludge from the plant is pumped through a 14-inch pipe line, 17.5 miles long, to the Southwest Treatment Works for disposal. This treatment plant was placed in partial service October 3, 1928 and in complete operation June 28, 1930. The plant was originally designed for an average flow of 175 M.G.D.[153a] and in May 1937 by the addition of 12 new final settling tanks, this average capacity was increased to 250 M.G.D. At this plant, sewage passes through bar screens, with 4-inch openings, is then pumped up 36 feet; then passes through grit chambers; then through bar screens with ⅝ inch openings, then through preliminary settling tanks (detention period 20 minutes); then through final settling tanks where the activated sludge is settled out and from which the effluent passes to the North Shore Channel. Approximately 23 per cent of the activated sludge taken from the final settling tanks is added to the fresh sewage just before it is passed into the aeration tanks. The remaining activated sludge (waste sludge) is combined with the sludge collected from the preliminary settling tanks and pumped through the 14-inch pipe line to the Southwest Treatment Works. Air for the aeration of sewage in the aeration tanks is provided by electrically driven blower units, compressing the air to 7.75 pounds per square inch. All the pumping units and other mechanisms in this plant are electrically driven.

[153] The data concerning the sewage disposal plants was obtained from the Sanitary District of Chicago and Official reports.

[153a] M.G.D. means million gallons per twenty-four hours.

The Calumet Sewage Treatment Project covers an area of 95 square miles, south of 87th Street, in Chicago, to 159th Street and from the Indiana State line west to Crawford Avenue. This project covers the Calumet industrial district and the municipalities immediately south of Chicago. The project consists of the Calumet Sewage Treatment Plant of the activated sludge type, 95th Street Pumping Stations, and about 44 miles of intercepting sewers, draining a sewered area of 42 square miles. The collecting sewers lead to the plant from the 95th Street pumping station on the Calumet River from Calumet City, and from Blue Island. This plant was placed in service December 3, 1935, and was designed for an average flow of 136 M.G.D. with a maximum of 204 M.G.D. At this plant the sewage passes through rack screens with 3½-inch openings; is then pumped up 33 feet; then passes through bar screens with ⅝-inch openings; then through preliminary settling tanks (detention period 10 minutes); then after dosing with returned activated sludge passes through aeration tanks (detention period 5 hours); then through final settling tanks where the activated sludge is settled and from which the effluent passes to the Calumet-Sag Channel. Approximately 30 per cent of the activated sludge is added to the raw sewage before aeration. The remaining activated sludge (waste sludge) is combined with the sludge from the preliminary settling tanks; it is dosed with ferric chloride and dewatered to about 82 per cent moisture on vacuum filters; then broken up and mixed with pre-dried sludge, the mixture placed in flash dryers, in which it is dried down to 6 per cent moisture; and this final dried material may then be burned in a furnace which provides part of the heat for drying. Most of this dried sludge is now used as a fertilizer. When the dried sludge is removed for sale as a fertilizer, additional heat for drying is supplied by the combustion of fuel oil.

The West Side Sewage Treatment Project covers an area of about 40 square miles, in Chicago, between Fullerton Avenue and the Main Channel and between Lake Michigan and Cicero Avenue. This includes the "Loop" district of Chicago. This project consists of the West Side Sewage Treatment Works, at Laramie Avenue and 39th Street, and 23 miles of intercepting sewers paralleling both sides of the Chicago River and the northwest side of the Drainage Canal, leading from Fullerton Avenue, southwest to the treatment works. The West Side Sewage Treatment Plant was designed for an average flow of 472 M.G.D. with a maximum of 708 M.G.D. The plant consists principally of three batteries of Imhoff tanks for the sedimentation of sewage and the digestion of sludge. Battery A of the Imhoff tanks was placed in service June 2, 1930; Battery B on July 14, 1930; Battery C on April 29, 1935. At this plant the sewage

passes through rack screens with 4-inch openings; is then pumped up 62 feet; then passes through bar screens with 1-inch openings; then passes through skimming tanks, from which the face flow passes to the Imhoff tanks (Detention period 2 hours, Batteries A and B; 1 hour, Battery C) where the sludge is settled from the sewage and digested and from which the effluent passes to the Main Channel. The underflow from the skimming tanks is diverted to grit chambers where the grit is settled out and from which the flow is passed to the Imhoff tanks. The grit is collected and hauled for final disposal to a spoil pile. The solids settled from the sewage in the Imhoff tanks pass down into the digestion compartment of these tanks and remain until thoroughly digested. The digested sludge is drawn out under favorable weather conditions and placed on sludge drying beds from which, after suitable drying, it is stripped by machines and hauled away to the waste sludge dump.

The Southwest Sewage Treatment Project covers an area of about 199 square miles, between 87th Street and the Main Channel in Chicago, and west from Lake Michigan, to include the Summit-Clearing industrial district. This project also includes the towns in the Des Plaines River Valley from Riverside, north to Des Plaines. At one time, this Des Plaines Valley was served by a separate treatment plant at Maywood but this plant was abandoned October 15, 1931 and the flow from it then absorbed in the West Side project,

The West-Southwest Treatment Works now serve a sewered area of 128 square miles drained by 68 miles of intercepting sewers and the upper Des Plaines and Western Springs Pumping Stations. The sewage Treatment plant is of the activated sludge type, was originally designed for an average flow of 400 M.G.D. with a maximum of 600 M.G.D. This plant, as originally constructed, was designated the "Southwest Side Treatment Plant" for treatment of sewage from the southwest area, including Packingtown and the Stockyards. This plant is being extended to provide final treatment for the West Side sewage and as a consequence is designated the "West-Southwest Sewage Treatment Works." The Southwest Side Plant was placed in partial service May 23, 1939 when sewage was pumped from the West Side intercepting sewer. The activated sludge was started June 9, 1939, and June 27, 1939 the first battery of aeration tanks was in service. Dewatering and incineration of sludge began August 7, 1939 and the plant has operated continuously since August 28, 1939. The southwest intercepting sewer was placed in service June 9, 1939, draining sewage from an area west of Western Avenue. The remaining part of this sewer system, including the Racine Avenue Pumping Station, was placed in service March 22, 1940. At the Southwest Plant, the sewage passes through bar screens, with 2-inch

openings; is then pumped up 45 feet; then passes through preliminary settling tanks (detention period 5 hours) then through final settling tanks where the activated sludge is settled and from which the effluent passes to the Main Channel. Approximately 40 per cent of the activated sludge (return sludge) is mixed with the raw sewage just before it enters the aeration tanks. The remaining sludge (waste sludge) is passed to concentration tanks where it is mixed with sludge from the preliminary settling tanks, also with waste sludge which has been pumped from the North Side Treatment Plant. The main sewage pumps are steam turbine driven and air for aeration of sewage and other plant uses is produced by steam turbine driven blowers which compress the air to a pressure of 8.5 pounds per square inch. The waste sludge after concentration in the sludge concentration tanks is conditioned with ferric chloride and dewatered to about 84 per cent moisture on vacuum filters. This dewatered sludge is mixed with predried sludge and the mixture placed in an enclosed flash dryer and dried down to about 6 per cent moisture. This dried sludge could then be burned in furnaces under the boilers which produce steam for the pumping and blower units but at the present time the dried sludge is removed from the system and sold as a fertilizer base. When sludge is sold as a fertilizer, approximately one-half ton of coal is required to furnish heat for drying one-ton of sludge.

Two of the four major sewage disposal plants above described, namely the West Side and the Southwest Plants require certain work in order to place the sewage treatments plants of the Sanitary District upon the basis of providing complete treatment for all of the sewage of the District. Work now under contract amounts to $9,130,000 and future contracts in the amount of $10,940,000 remain to be let. Funds are available for this work which is expected to be completed in 1949.

The Sanitary District of Chicago owns and operates a hydroelectric power plant at Lockport, Illinois. There were originally seven water turbines installed in the Lockport Power House, each using 1,667 c.f.s.[153b] when operating; two of these turbines now use 1,667 cubic feet per second when operating; one uses 556 c.f.s., one is inoperable, and the fifth is being replaced by a unit which will use 1,400 c.f.s. Two others were replaced by new units in 1935, each of which uses 2,200 c.f.s. at full load. The total discharge capacity of the seven units is about 10,000 cubic feet per second.

The electrical Division of the Engineering Department operates and maintains the Lockport Power House and an electrical transmission and distribution network consisting of approximately 1,700,000

[153b] c.f.s. means cubic feet per second.

duct feet of underground conduit, 850,000 feet of underground cable and a million feet of overhead wire. It also operates and maintains the electrical equipment in the pumping stations, sewage treatment works, controlling works, bridges, and other properties of the Sanitary District. This division also designs and supervises installation of all new electrical work and furnishes advice on all electrical engineering matters for all divisions.

The tabulation appearing below shows the source and distribution of the electrical energy received and disposed of by the electrical division for the years 1944, 1945 and 1946, and the present status:

	Kilowatt Hours 1944	Kilowatt Hours 1945	Kilowatt Hours 1946
Power Generated at Lockport Power Power House	78,111,960	76,946,710	77,415,470
Power Generated at Southwest Treatment Works and Purchased from Maintenance and Operating Divison	9,063,300	6,939,000	7,472,400
Power Purchased from Public Service Co. of Northern Illinois	145,969,480	153,064,806	151,257,674
Total Power Received	233,144,740	236,950,516	236,145,544
Sold to Sanitary District	101,625,929	123,826,554	127,022,089
Sold to Other Municipal Consumers	124,867,148	123,826,554	127,022,089
Sold to Commercial Consumers[154]	1,348,815	1,486,133	320,480
Total Power Sold	227,841,892	232,310,904	231,277,460
Power Consumed by Electrical Division	799,909	826,154	575,285
Total Power Accounted for	228,641,801	233,137,058	231,852,745
System Losses	4,502,939	3,813,458	4,292,799
Total Power Consumed by System	233,144,740	236,950,516	236,145,544

PRESENT STATUS (1947) (Estimated)

	Kilowatt Hours
Power Generated Lockport	77,000,000
Transmission Losses	3,000,000
Lockport Power in Chicago	74,000,000
Surplus Generated Southwest Treatment Works	7,500,000
Total by Sanitary District in Chicago	81,500,000
Purchased from Public Service Co.	151,500,000
	233,000,000
Used by Sanitary District 104,000,000 KWH	
Sold to Municipalities 127,000,000 KWH	
Used by Electrical Division and Lost in Distribution of Sanitary	
	231,000,000
Used by Electrical Division and Lost in Distribution of Sanitary District	2,000,000

[154] All Commercial Consumption Discontinued May 1, 1946.

The tabulations appearing hereinafter show the amount of sewage treated in each of the main plants of the Sanitary District of Chicago and the degree of purification attained as shown by the reduction in bio-chemical oxygen demand and the amount of solids removed per day:

	M.G.D.[155]	Per Cent Reduction B.O.D.[156]	Solids Removed Tons Per Day
1. THE NORTH SIDE PLANT			
1939	202.5	93.5	
1940	188.2	94.6	103.0
1941	206.8	94.9	111.0
1942	195.8	94.5	104.9
1943	195.8	93.5	97.1
1944	188.0	94.9	
1945	200.5	93.5	
1946	197.5	94.7	104.4
2. THE CALUMET PLANT			
1939	71.6	87.0	
1940	67.2	90.7	30.6
1941	66.4	90.5	32.5
1942	82.4	90.2	39.9
1943	93.6	87.4	38.3
1944	85.8	87.1	42.9
1945	72.1	89.0	35.2
1946	73.7	89.4	36.4
3. THE WEST SIDE PLANT			
1939	237.8	50.0	
1940	361.5	50.0	
1941	462.0	44.3	
1942	429.8	44.7	
1943	413.4	38.9	
1944	356.7	34.8	
1945	418.7	36.0	
1946	395.7	42.3	

4. THE SOUTHWEST PLANT

	COMPLETE TREATMENT		SOLIDS REMOVED TONS PER DAY		PRELIMINARY SETTLING	
	M.G.D.	B.O.D. Reduction	Heat Dried	To Lagoons	M.G.D.	B.O.D. Reduction
1946	288	93.6	81.6	276.0	68	24.6
1939 (8 Mo.)	282	85.8	112		0	0
1940	192	91.7	155		121	24.4
1941	154	90.2	159		184	25.6
1942	143	93.0	135		188	27.5
1943	143	91.7	87		209	22.1
1944	183	91.0	66.4	107.5	219	18.5
1945	280	91.1	94.0	171.0	61	21.9

SOUTHWEST PLANT—
COMPOSITE TOTAL

	M.G.D.	B.O.D. Reduction
1939 (8 Mo.)	282	85.8
1940	313	67.3
1941	338	56.1
1942	331	56.5
1943	352	51.4
1944	302	50.7
1945	341	79.9
1946	356	81.3

[155] M.G.D. means—Million gallons per 24 hours.
[156] B.O.D. means—Bio-chemical Oxygen Demand.

The following tabulations show the amount of sewage treated and the degree of purification attained in some other cities where the activated sludge process of sewage treatment is used:[157]

1. MILWAUKEE
Activated Sludge

	Flow M.G.D.	Percent Reduction B.O.D.
1940	120.3	94.6
1941	124.8	93.5
1942	127.7	92.2
1943	125.4	93.5
1944	122.0	94.3
1945	121.5	94.4
1946	121.9	95.1

2. CLEVELAND (Easterly Plant)
Activated Sludge

1939	64.8	93.5
1940	82.2	91.5
1941	76.2	90.7
1942	87.0	92.5
1943	91.3	90.9

3. GARY, INDIANA
Activated Sludge

1941	19.37	94.31
1942	20.72	94.72
1943	21.50	92.82
1944	18.83	96.42
1945	19.51	93.92
1946	20.38	92.99

(e) *The Effect of the Chicago Diversion on the Levels of the Great Lakes.*

From the very beginning of this controversy the engineers and others who studied this problem have been unanimous in their agreement that the withdrawal of water from Lake Michigan through the Chicago Drainage Canal has the effect of lowering the levels of the Great Lakes. There has been some slight difference of opinion as to the amount of lowering of the levels of the Great Lakes produced by the withdrawal of a given quantity of water through the Chicago Drainage Canal.

In round numbers, the engineers today agree that a diversion of 10,000 c.f.s. will lower lake levels from 6 to 7.2 inches. This matter was first publicly discussed in January 1888 by Lyman E. Cooley in a brief entitled "The Lakes and Gulf Waterway", in which he estimated the lowering effect of a diversion of 10,000 c.f.s. at somewhere between 0.20 and 0.40 foot, or 2.4 to 4.8 inches.

In September 1888, George Y. Wisner figured the lowering at 2½ to 3¾ inches, in a paper before the Western Society of Engineers. In a discussion in the Journal of the Association of Engineering Societies, March 1899, Lyman E. Cooley figured it at 3½ to 5 inches, and J. B. Johnson, Professor of Engineering at Washington University, St. Louis, Missouri, placed it at 2½ to 3 inches.

In a paper read before the Western Society of Engineers in October, 1894, Mr. T. T. Johnston, Assistant Chief Engineer of the

[157] These statistics were obtained from offical sources.

Sanitary District of Chicago, concluded that the lowering effect of this diversion would be less than six inches.

In August, 1895, while the Drainage Canal was still under construction, the Poe Board, after a very exhaustive investigation, reported to the Chief of Engineers of the United States Army that a diversion of 10,000 c.f.s. of water at Chicago would ultimately lower Lakes Michigan and Huron 0.61 foot and Lake Erie 0.53 foot.

In February, 1896, Mr. J. L. P. O'Hanley, a Canadian civil engineer, reported to Canadian authorities that this diversion would lower the levels of Lake Huron-Michigan some 6.444 inches. Mr. O'Hanley had the data used by Poe, Ruffner and Marshall of the United States Engineering Corps, U.S.A.

Major W. L. Marshall, United States District Engineer at Chicago, reported, in April 1899, that in his opinion the abstraction of 5,000 to 10,000 c.f.s. of water would permanently lower Lakes Michigan, Huron and Erie from three to eight inches.

In August, 1905, the Ernst Board reported to the Chief of Engineers of the United States Army, that the final effect of withdrawing 10,000 c.f.s. of water from Lake Michigan would be to lower the level about six inches.

In January, 1907, the International Waterways Commission reported to the Secretary of War of the United States and to the Minister of Public Works of Canada, that a diversion of 10,000 c.f.s. of water from Lake Michigan would ultimately lower the levels as follows:

Lakes Michigan and Huron	0.52 foot or 6.24 inches
Lake Erie	0.45 foot or 5.4 inches
Lake Ontario	0.35 foot or 4.2 inches

In the litigation between the United States and the Sanitary District of Chicago, the summary of the evidence regarding the increments of the St. Clair, Niagara and St. Lawrence Rivers, given in 1909 by Alfred Noble, Louis C. Sabin, Francis C. Shenehon, Eben S. Wheeler, and Major Charles Keller, indicated that a diversion of 10,000 c.f.s. of water from Lake Michigan would lower the levels as follows:

Lakes Michigan and Huron	0.52 foot or 6.24 inches
Lake Erie	0.46 foot or 5.52 inches
Lake Ontario	0.35 foot or 4.2 inches

In August, 1913, the Bixby Board reported to the Chief of Engineers that this diversion of 10,000 c.f.s. of water at Chicago would lower the levels as follows:

Lakes Michigan and Huron	0.465 foot or 5.58 inches
Lake Erie	0.448 foot or 5.38 inches
Lake Ontario	0.431 foot or 5.17 inches

Colonel J. G. Warren and W. S. Richmond, in a report made to the Chief of Engineers of the United States Army, on Diversions of Water from the Great Lakes and Niagara River, dated August 30, 1919, figured that the uncompensated diversion of 8,800 c.f.s. at Chicago would lower the levels as follows:

Lakes Michigan and Huron	0.43 foot or 5.16 inches
Lake Erie	0.41 foot or 4.94 inches
Lake Ontario	0.42 foot or 5.04 inches

In 1924 and 1925 the Engineering Board of Review of the Sanitary District of Chicago, which included such hydraulic engineers as John R. Freeman, C. E. Grunsky, E. E. Haskell, John B. Hawley, Robert E. Horton, Clarence W. Hubbell, Richard R. Lyman, Arthur E. Morgan and Sherman M. Woodward, checked the figures of Colonel Warren as substantially correct.

The Joint Board of Engineers on St. Lawrence Waterway Project, in its report of November 16, 1926, concluded that the diversion of 8,500 c.f.s. at Chicago had lowered the levels as follows:

Lakes Michigan and Huron	0.5 foot or 6 inches
Lake Erie	0.4 foot or 4.8 inches
Lake Ontario	0.4 foot or 4.8 inches

Charles Evans Hughes, Special Master in the case of *The State of Wisconsin et al v. The State of Illinois and the Sanitary District of Chicago,* in his report to the Supreme Court, November 1927, found that the diversion of 8,500 c.f.s. of water at Chicago had lowered the levels as follows:

Lakes Michigan and Huron	0.50 foot or 6 inches
Lake Erie	0.40 foot or 4.8 inches

On the basis of the Hughes Report the lowering of lake levels for a diversion of 10,000 c.f.s. at Chicago would be as follows:

Lakes Michigan and Huron	7.2 inches
Lake Erie	5.64 inches

The Hughes findings were based on the latest computations of the U. S. Lake Survey, as submitted in the testimony of Col. G. B. Pillsbury.

The United States Supreme Court, in an unanimous decision, written by Mr. Chief Justice William Howard Taft, affirmed the findings of Special Master Hughes on this point, in the following language:[158]

> "The diversion which has taken place through the Chicago Drainage Canal has been substantially equivalent to a diversion of about 8,500 feet a second for a period of time sufficient to

[158] 278 U.S. 367 (1929) at pp. 407-408.

> cause, and it has caused the lowering of the mean levels of the Lakes and the connecting waterways, as follows: Lakes Michigan and Huron approximately 6 inches; Lakes Erie and Ontario approximately 5 inches; and of the connecting rivers, bays and harbors to the same extent respectively. A diversion of an additional 1,500 cubic feet per second, or a total diversion of 10,000 cubic feet a second would cause an additional lowering in Lakes Michigan and Huron of about one inch, and in Lakes Erie and Ontario a little less than one inch, with a corresponding additional lowering in the connecting waterways."

(f) *Fluctuations in Lake Levels.*

The fact is that the changes in lake levels resulting from the Chicago diversion are always the same regardless of change in lake levels due to natural or other causes.

The Great Lakes are a series of natural reservoirs in which are stored large volumes of water collected from their respective drainage basins. The supply of water to the Great Lakes is furnished by the inflow of the many rivers of their drainage basins, increased by the rainfall on the lakes themselves and decreased by the evaporation from the lake surfaces. The connecting and outflow rivers are the overflows for these reservoirs. The amounts of water in storage are dependent upon the differences between supply and overflow and are measured by the heights of water in the reservoirs. Variations in lake levels register the variable differences between net water supply and the loss through discharge by way of the outlet rivers and the loss through evaporation. When the rate of supply to a lake is greater than the discharge, the amount of storage increases and the stage of the lake rises, and when less the storage decreases and the lake falls.

The total area of the drainage basins of the lakes is approximately 300,000 square miles, of which nearly one-third is occupied by lake surface. It has been demonstrated that the average supply received from the land areas about equals that received as rainfall on the lakes, but that on the average roughly 40 per cent of this total gross supply is lost by evaporation. Theoretically, if the water surface of the lake is reduced through the lowering of the lake levels, the evaporation will be decreased. However, as a practical matter this effect would be negligible since the recession of the water surface, due to lowered lake levels, is so small compared to the large expanse of water surface on the Great Lakes that decreased evaporation due to this cause is of no consequence. The net supply of water in the Great Lakes varies widely. The records show rates of net water supply to the whole Great Lakes system exceeding 800,000 c.f.s. for a month, and they also show months during which the evaporation from the lakes exceeded the water received from all sources, with

a consequent negative net supply. The average monthly net supply for the months of April and May is at a rate exceeding 500,000 c.f.s., and the average net supply for the month of November is at a rate of less than 20,000 c.f.s. The Great Lakes absorb the great variations in water supply, because of the rise and fall of their levels. When the water supply is high the lake levels rise and store water; when the water supply is low the lake levels fall and deliver the stored water. The average annual rise and fall of the various lakes due to the seasonal variations in supply is from 1¼ to 2 feet, but extreme variations in seasonal supply have caused fluctuations in lake levels ranging from 2.67 feet on Lake Superior to over 4 feet on LakeOntario. Extreme high and low lake levels are reached at the ends of periods of excessive or deficient water supply extending over several years. The period of low rainfall occurring during the nineteen-twenties brought down the levels of the lakes during the middle twenties and, with other factors, produced record low levels on Lakes Michigan, Huron and Erie at that time. During the nineteen-thirties the lake levels fluctuated but were generally fairly low after high levels in 1929 and 1930. During the past three years the lake levels are again fairly high.

(g) *Mean levels of the Great Lakes.*

The monthly mean levels of the Great Lakes, and the mean levels for each year, are available through the records of the United States Lake Survey at Detroit, Michigan, which is charged with the duty of charting the Great Lakes and recording their levels. The mean level of the Great Lakes is determined with reference to the mean level of tidewater at New York.

As Lake Superior is higher than Lake Michigan and Huron, it is not influenced by the condition existing in the lower lakes. The extensive diversion of water for power development at St. Mary's Falls, amounting approximately to 50,000 c.f.s., has made necessary the installation of gates across the river at the head of the falls, to control the outflow and levels of Lake Superior. The gates are operated and the diversions are controlled by an international board of control, in accordance with conditions laid down by the International Joint Commission, May 26-27, 1914. Their operation substitutes artificial for natural control of the levels of Lake Superior, and has, in general, increased the levels of that lake at low water, and somewhat diminished those at high water.

The levels of Lakes Michigan and Huron are substantially the same. The official records of the mean annual levels of Lakes

Michigan-Huron, that is, elevations above tidewater for all the years from 1860 to 1946 are as follows:

MEAN ANNUAL LEVELS OF LAKES MICHIGAN-HURON ABOVE MEAN TIDEWATER AT NEW YORK[159]

Year	Feet	Year	Feet	Year	Feet	Year	Feet
				1904	580.86	1926	578.04
1860	582.68	1882	582.19			1927	578.86
1861	582.66	1883	582.37	1905	580.98	1928	579.85
1862	582.62	1884	582.47	1906	581.05	1929	581.37
1863	582.15			1907	581.06		
1864	581.53	1885	582.72	1908	580.99	1930	580.52
		1886	582.96	1909	580.50	1931	578.80
1865	581.29	1887	582.32			1932	578.19
1866	580.96	1888	581.71	1910	580.15	1933	578.03
1867	581.40	1889	581.16	1911	579.60	1934	577.69
1868	580.91			1912	580.07		
1869	581.03	1890	581.05	1913	580.68	1935	578.08
		1891	580.49	1914	580.24	1936	578.24
1870	581.94	1892	580.38			1937	578.18
1871	581.87	1893	580.67	1915	579.73	1938	578.94
1872	580.59	1894	580.78	1916	580.35	1939	579.39
1873	581.24			1917	581.16		
1874	581.73	1895	579.74	1918	581.40	1940	578.98
		1896	579.47	1919	580.91	1941	578.89
1875	581.48	1897	580.13			1942	579.59
1876	582.61	1898	580.31	1920	580.56	1943	580.54
1877	582.38	1899	580.32	1921	580.10	1944	580.48
1878	582.07			1922	579.98		
1879	581.15	1900	580.28	1923	579.38	1945	580.37
		1901	580.53	1924	579.09	1946	580.46
1880	581.27	1902	580.21				
1881	581.70	1903	580.36	1925	578.24		

(h) *Effect of diversions on the levels of the Great Lakes.*

The foregoing table shows that the average change in the mean level of the Great Lakes over the years between and including the period from 1860 to 1899, and between the period beginning 1900 to 1946, is more than 18 inches. This lowering of the levels of the lakes has deprived the modern huge lake freighters of the ability to load to an average additional water depth of at least 18 inches.

In general, the outflow or discharge through the natural outlet increases or decreases with the head or stage of water in the lake and with the slope of the outflowing stream. Under these natural laws there is a constant tendency toward equalization of supply and discharge. Thus, if the water supply, which varies from month to month and from year to year, should become constant the stage of water in the lake would soon reach and remain at a height whereby the discharge would exactly equal the supply. If the supply should be increased or decreased by a constant amount, the level of the lake would gradually change until a new level was reached where the supply and discharge would again be equal. There is the same natural tendency toward equalization when through natural or arti-

[159] These statstics were obtained from official records.

ficial agencies the capacity of the outlet or outlets is changed. Thus, if the stage of a lake is at a height where the supply and discharge are equal, if the outlet is enlarged or an additional outlet is created, the discharge will be increased for a time, and as the supply is unaffected, the storage is diminished and the stage of water falls. With the falling stage the discharge decreases until the rates of supply and discharge become equal. With a variable supply the effect is fundamentally the same, although it may be affected by the changes in level caused by the change in supply. For example, if when the outlet is enlarged, the supply happens to increase by a greater amount or faster than the simultaneous increase in capacity of discharge, the result is a changing stage. However, the increase in stage in such case is less than it would have been without the change in outflow conditions and the lowering effect is real although not apparent.

When water is diverted from the outlet, the lake levels will be steadily lowered, with respect to their natural levels, until the discharge capacity of the outlet has been reduced by an amount corresponding to the diversion, after which the effect of the diversion on lake levels ceases to increase. The time required for the decreasing outflow to reach an equilibrium with the decreased supply due to a diversion depends on the area of the lake in relation to its outlet capacity. Theoretically, the complete effect of a diversion is never shown; that is, a mathematical formula would require infinity. But within practical limits, under present conditions, approximate equilibrium is reached on Lakes Erie and Ontario in about a year. About five years are necessary to give about 90 per cent of the full effect of the diversion on the combined areas of Lake Michigan and Huron.

It appears that the levels of the Great Lakes have been affected by the following artificial factors: the regulating works, already mentioned, in the St. Mary's River at the outlet of Lake Superior; the diversion of the Chicago Sanitary District from Lake Michigan; diversions from Lake Erie, for power and navigation, through the Welland Canal, and from the Niagara River; and changes in the discharge capacity of the St. Clair River at the outlet of Lake Huron, and of the St. Lawrence River, affecting Lake Ontario.

(i) *The Chicago diversion.*

As the Chicago drainage canal created a new outlet for the water of Lake Michigan, it is not open to dispute that this diversion has operated to reduce the levels of the Great Lakes (other than Lake Superior) below the levels which otherwise would have existed. The fact that the lake levels have fluctuated does not affect this conclusion. After the introduction of an additional artificial outlet, the surface of the lake will continue to fluctuate in the same manner

that it fluctuated before the lowering caused by the diversion took place; but the high water and low water of the lake after the cutting of the artificial outlet will be lower than they would have been had the diversion not been made.

(j) *The proposal that compensating or regulating works be installed to compensate for the artificial lowering of the Great Lakes caused by the Chicago Diversion is not feasible.*

For many years the officials of the State of Illinois and the Sanitary District of Chicago have urged that regulating or compensating works be constructed in certain channels of the Great Lakes to compensate for loss of lake levels due to the Chicago diversion.

It is contended that the installation of compensating works would effectively restore all artificial lowerings of the levels of those lakes and particularly the lowering caused by the Chicago diversion. That is, in effect, a request to the Lake states to abandon their rights and to look to some artificial and, at present, speculative and uncertain substitute. There are many objections to this course.

First, regulating or compensating works can not be constructed in the St. Clair, Detroit and Niagara Rivers without the consent of Canada. It is safe to say that the consent will never be given so long as the United States permits the State of Illinois to abstract large quantities of water from the Great Lakes-St. Lawrence watershed for sanitation and power purposes. This conclusion is confirmed, were confirmation necessary, by the terms of one of the proposed Great Lakes-St. Lawrence Deep Waterway Treaties, under which Canada had indicated a willingness to give that consent only upon condition that the Uniterd States agree to restrict the diversion at Chicago in accordance with the decree of the Supreme Court dated April 21, 1930.

Second, it is certain that conditions on the Great Lakes will be better with compensating works and the diversion at Chicago reduced to the amount fixed by the decree, than with compensating works and a continuation of the present diversion at Chicago. It is clear that some of the damages caused by the abstraction of the waters of the Great Lakes-St. Lawrence watershed through the Chicago Drainage Canal can not be mitigated or minimized by the construction of compensating works.[160]

Third, compensating works are a matter of national benefit, if they are successful at all, and the Lake states can no more be required to surrender, in effect, their share of that national benefit for the

[160] Wisconsin et al v. Illinois et al, 278 U.S. 367, Master's Report 72, 65 Joint Abstract of Record in the U.S. Supreme Court, Jan. 24, 1928, p.p. 152, 183.

profit of the State of Illinois, either by way of sewage disposal or water power, than they could be required to pay to the State of Illinois the equivalent of any funds which might be appropriated by the Federal Government to improve the outer harbors at any of the ports of the Great Lakes. The evidence on the original Reference established that there are over 400 ports and landings on the Great Lakes, many of which, though usable, have no Federal improvements, and as to which any increase in depths, either with or without compensating works, determines the feasibility from an economic standpoint of water-borne traffic, both interstate and intrastate. The record on original Reference also established that Federal improvements on the Great Lakes consist of making a channel from deep water to the entrance of the local harbors, and that usually the local or inner harbors and navigation facilities have been and are provided either at the expense of the local municipality or at the expense of private industries, and often both. Moreover, compensating works in themselves produce certain harmful effects on the vast navigation of the Great Lakes by creating high velocities in the critical channels, and the greater the amount of compensation required (and the requirement is principally produced by the Chicago diversion) the greater such harmful effects.

Fourth, compensating works would not replace the water abstracted at Chicago and this water is, therefore, lost to the Niagara River where such water could develop many times more power than along the Illinois Waterway. This national economic loss in power cannot be compensated for nor restored by the installation of remedial works in the Great Lakes Waterway or connecting channels.

The United States Supreme Court, in its decision dated May 22, 1933, effectively disposes of the argument that compensating works may be constructed in the Great Lakes-St. Lawrence Waterway to restore artificially lowered lake levels, in the following language:[161]

> "Third. Similar considerations apply to the argument based on the provisions of the Rivers and Harbors Act of July 3, 1930, and of the pending treaty with Canada as to the Great Lakes-St. Lawrence Waterway, in relation to compensation works through which, it is urged, the restoration of Lake levels may be effected. The reference is to the construction of compensation works in the Niagara and St. Clair rivers. Counsel for Illinois say that 'upon the adoption of this Treaty the appropriation made for the projects authorized in the Rivers and Harbors Bill of 1930, including compensation works, by the War Department Appropriation Bill of 1931, becomes immediately available for carrying out this Treaty requirement,' and that the Court should assume that, either under the Treaty

[161] Wisconsin *et al* v. Illinois *et al,* 289 U.S. 395, 404 (1933).

or under the Act of 1930, compensation works with the desired result will be installed. But it is apparent that there is no basis for the suggested assumption. It would be manifestly inappropriate to discuss the provisions of the pending Treaty, bearing upon the diversion of water from Lake Michigan, as the Treaty is not in effect. And there is no ground for concluding that the compensation works to which reference is made could be installed in the absence of treaty. What, if anything will be done in the establishment of compensation works is undetermined."

"The decisive point is that nothing has been done which affects the operation of the decree and that the obligation of defendants to carry out its terms is in full force."

In view of the foregoing, it is clear that the installation of compensation works for restoration of the artificially lowered lake levels due to the Chicago diversion cannot be considered as feasible.

(h) *There is no Justification for any Increase in the Diversion at Chicago.*

1. *The original Dilution System of the Sanitary District of Chicago is no longer a Part of the District's program for the disposition of the Sewage of the Chicago Metropolitan Area.*

The Sanitary District of Chicago was organized under an Act of the Illinois Legislature passed May 29, 1889. The primary purpose was to provide a Main Drainage Channel through the divide between the Chicago and Des Plaines Rivers to divert the sewage of Chicago from Lake Michigan for the protection of the municipal water supply from contamination by sewage and storm water. To dispose of the sewage by dilution and prevent nuisance downstream along the Des Plaines and Illinois Rivers, a dilution of 3.3 cubic feet of water per second for every 1,000 of population drainage into the canal was required by the Illinois Act of May 29, 1889. It was further provided that the channel should have a capacity of 5,000 c.f.s. in earth sections and 10,000 c.f.s. in rock. Another section of the Act specified that when the channel was completed it would be declared a navigable stream and that the Federal Government should have full control over it for navigation needs but not to interfere with its operation for sanitary purposes.

The construction of the Main Drainage Canal was begun in 1892 and completed in 1900. This canal extends from the South Branch of the Chicago River at Damen Avenue (Robey Street) 28 miles to connect with the Des Plaines River at Lockport, Illinois. The upstream 7.8 miles of this channel, all in earth section, from Damen Avenue to Summit, had a nominal flow capacity of 6,500 c.f.s., in-

creased by widening in 1913 to 8,500 c.f.s. The downstream 20.2 miles of the channel, 5.3 miles in earth and rock section Summit to Willow Springs, and 14.9 miles in rock section Willow Springs to Lockport, had a nominal flow capacity of 10,000 c.f.s., plus.

The 10,000 c.f.s. ultimate capacity was designed to carry the storm run-off from the Chicago River drainage area, then estimated at about 10,000 c.f.s. At the dilution ratio specified in the Sanitary District Act it would dispose of the sewage from 3,000,000 people. Today, the District has an estimated population of 4,166,000.

The Main Channel had a depth of 24 feet and minimum width of 160 feet and all bridges across it were movable, to make it adequate for navigation. It was designated the Chicago Sanitary and Ship Canal. Waterway advocates in the nineties felt certain that it would ultimately become an important link in the Waterway from the Great Lakes to the Gulf of Mexico. It was intended to quickly supplant the Illinois and Michigan Canal between Chicago and Joliet, Illinois, and did so by 1908.

Since the major portion of the flow in the Main Drainage Canal, except in storm times, was to be supplied from Lake Michigan through the Chicago River, and since this river in a state of nature was a comparatively narrow shallow stream, considerable improvement was necessary. The Federal Government improved the Main Branch of the Chicago River, about one mile long from its mouth to its junction with the South Branch at Lake Street, to an average width of about 220 feet and a depth of 20 to 22 feet.

The South Branch of the Chicago River was straightened, widened and deepened by the Sanitary District, about five miles, from Lake Street to Damen Avenue, to provide a channel 200 feet wide, 26 feet deep over the central 100 feet and 16 feet deep at the dock lines. This work was started in 1896 and the most constricted and tortuous portions of this stream enlarged prior to 1900, at which time it was considered to have capacity to flow 5,000 c.f.s. of water with a current of one and one-fourth miles per hour. The major portion of this improvement was completed by 1912 although the project was not entirely finished until 1920.

Water from Lake Michigan through the Chicago River was admitted to the Main Drainage Canal January 2, 1900, and flow through the channel was started January 17, 1900. The flow was regulated by controlling Works, discharging into the Des Plaines River, at the lower end of the canal at Lockport, Illinois.

The Illinois Legislature amended the Sanitary District Act, May 14, 1903, authorizing the extension of the Main Drainage Canal, the development of water power in this extension, and the construction of the North Shore and Calumet-Sag Channels. The North Shore

Channel, tributary to the North Branch of the Chicago River, has no particular bearing on the subject of the "Chicago Diversion."

The Main Channel was extended during the years 1903 to 1907 from the Lockport Controlling Works 4.2 miles to the Upper Basin of the Illinois and Michigan Canal in Joliet. In this Upper Basin the Illinois and Michigan Canal crosses the Des Plaines River. Midway in the Main Channel Extension a navigation lock (maximum lift 40 feet) was installed and the Lockport Power House constructed to utilize a drop of 34 to 38 feet in the water flowing in the Drainage Canal.

The Calumet-Sag Channel was constructed during the years 1911 to 1922 from the Little Calumet River near Blue Island, Illinois, 16.2 miles, to connect with the Main Drainage Canal at Sag, about 11 miles above Lockport. This channel has a depth of 20 feet, minimum width 60 feet, and a designed flow capacity of 2,000 c.f.s. At the upstream end of this channel, Control Works, in the form of a navigation lock 400 ft. by 50 ft., with two pairs of electrically operated sector gates, regulate the flow from the Little Calumet River into and through the Calumet-Sag Channel.

The Little Calumet River was dredged, in 1925, by the Sanitary District, to a depth of 12 feet over a bottom width of 90 feet, from the Calumet-Sag Controlling Works 8.5 miles to the Forks, where the Grand Calumet, flowing westerly from Indiana, joins the Little Calumet to form the Calumet River. This same reach of the Little Calumet was further improved by the Federal Government, 1937-1939, to a width of 300 feet.

The Calumet River, about 6 miles long, from Lake Michigan to the Forks, southeast of Lake Calumet, has been improved by the Federal Government to a width of 200 feet and navigable depth of 20 feet.

The Channels mentioned in the preceding pages, with certain intercepting sewers, pumping stations, etc., comprise the dilution system of the Sanitary District of Chicago, the operation of which turned back all sewage in Cook County, Illinois, from Lake Michigan and protected the public water supply. Disposal of sewage by dilution was the only method seriously considered by Chicago authorities in 1890, when this system was being planned. Population of the Sanitary District was then about 1,000,000, and it was estimated this would increase to 3,000,000 by 1920. The actual population in 1920 was 2,986,000 and 1940 was 3,962,514. The population of the Sanitary District today (1947) is about 4,166,000, and the estimated population for 1950 is 4,253,500. The successful operation of this dilution system, without adequate sewage disposal plants, depended upon the diversion of water from Lake Michigan, in amount up to 10,000 c.f.s.

Today, with the North Side, Calumet, West Side and Southwest sewage disposal plants in operation, no diversion of water from the Great Lakes is necessary to provide the complete treatment of sewage required by the decree of April 21, 1930.

2. *Diversion and Flow through the Chicago Drainage Canal.*

The flow through the Chicago Drainage Canal is measured at the outlet end, at Lockport, over movable dams, through locks, sluice gates and water wheels. The total flow includes sewage from the Chicago metropolitan district and certain infiltration and some storm flow from the parallel Des Plaines River. The sewage is the same as the domestic water pumpage. The amount of domestic pumpage (sewage) is deducted from the total flow to determine the diversion from the Lake Michigan watershed. This diversion includes the run-off from the Chicago and the Calumet River watersheds, estimated to average about 500 to 550 c.f.s. Since 1925 the Des Plaines River inflow has been deducted, and since 1942, the natural run-off from the Sag Valley and a certain portion of the Des Plaines Valley west of the Lake Michigan divide have also been deducted from the total flow, in computing the net diversion.

In the table following are indicated the total flow, sewage flow, Des Plaines River inflow, etc., and the net diversion from the Great Lakes watershed, on an annual average basis for the years 1900 to 1946:[162]

Year	Total Flow at Lockport c.f.s.	Des Plaines River Inflow; Infiltration and Run-off c.f.s.	Domestic Pumpage Chicago Metropolitan District Sewage c.f.s.	Net Diversion c.f.s.
1900	2,990	449		2,541
1901	4,046	531		3,515
1902	4,302	554		3,748
1903	4,971	582		4,389
1904	4,793	618		4,175
Av. 1900-04	4,220	547		3,673
1905	4,480	636		3,844
1906	4,473	676		3,797
1907	5,116	704		4,412
1908	6,443	726		5,717
1909	6,495	744		5,751
Av. 1905-09	5,401	697		4,707
1910	6,833	803		6,036
1911	6,896	785		6,111
1912	6,938	853		6,085

[162] These statistics were furnished by the Sanitary District of Chicago from official records.

1913	7,839	894		6,945
1914	7,815	949		6,866
Av. 1910-14	7,264	857		6,407
1915	7,738	939		6,799
1916	8,200	972		7,228
1917	8,726	993		7,733
1918	8,826	1,018		7,808
1919	8,595	1,106		7,489
Av. 1915-19	8,417	1,006		7,411
1920	8,346	1,176		7,170
1921	8,355	1,199		7,156
1922	8,588	1,216		7,372
1923	8,348	1,220		7,128
1924	9,465	1,274		8,191
Av. 1920-24	8,620	1,217		7,403
1925	8,278	1,338		6,940
1926	8,283	1,395	15	6,888
1927	8,450	1,460	5	6,985
1928	10,010	1,565	45	8,400
1929	9,450	1,680	70	7,700
Av. 1925-29	8,894	1,488	27	7,379
1930	8,360	1,700		6,660
1931	8,180	1,680		6,500
1932	8,100	1,650	2	6,448
1933	8,005	1,690	45	6,270
1934	8,125	1,692		6,433
Av. 1930-34	8,154	1,682	9	6,462
1935	8,093	1,602	7	6,484
1936	6,607	1,712	33	4,862
1937	6,677	1,665	23	4,989
1938	6,648	1,604	45	4,999
1939	3,132	1,586	47	1,499
Av. 1935-39	6,231	1,634	31	4,567
1940	3,319	1,589	49	1,681
1941	3,341	1,610	235	7,496
1942	3,269	1,575	166	1,528
1943	3,472	1,605	367	1,500
1944	3,412	1,606	275	1,531
Av. 1940-44	3,362	1,597	218	1,547
1945	3,402	1,587	317	1,498
1946	3,373	1,600	278	1,495

3. *Budgeting of Water by the Sanitary District.*

The diversion of water from the Lake Michigan watershed is under the supervision of the United States District Engineer at Chicago, and under his direct control in times of flood on the Des Plaines and Illinois Rivers. This water is carefully budgeted, to obtain greater flow during the summer months when both navigation and sanitation

needs are greatest. More power is produced then also, but at a time when it is least needed. Sewage flow is almost constant (about 1,700 c.f.s.); run off from major storms must be taken at the infrequent times of heavy rains (270 c.f.s. annual average); which leaves 1,230 c.f.s. annual average as the only flow which can be varied. The budget for a year is about as follows:

Jan., Feb., Nov., Dec.----	1600	900	2,500	200
Mar., Oct. ----------	1,600	1,000	2,600	300
Apr., Sept. ----------	1,600	1,100	2,700	300
May, June, July ------	1,600	1,800	3,400	300
Aug. ----------	1,600	1,600	3,200	300
Av. ----------	1,600	1,230	2,830	270
Total: ----------	3,100 c.f.s.			

If the storm flow allowance for any month is exceeded by actual storm run-off, the diversion for the following month is reduced, to balance; and vice versa. Des Plaines River inflow, etc. is taken as it occurs, and not budgeted.

The run-off from storms frequently requires a discharge from the lower end of the channel as great as 12,000 c.f.s. for brief intervals. It has been as high as 17,000 c.f.s., for an hour.

(1) *No diversion above the 1500 c.f.s. approved by the Supreme Court is legally justified and no diversion can be be factually justified.*

Some proponents of a large continuing diversion at Chicago contend that increased diversion is necessary as a health measure to eliminate or alleviate offensive conditions in the Chicago River, the Drainage Canal, and Illinois Waterway due to pollution caused by deposits of untreated or partially treated sewage from the Chicago metropolitan area.

In January 1940 the state of Illinois petitioned the United States Supreme Court for temporary increased diversion because of an alleged menace to health to the people residing in and near Joliet, Illinois. The lake states opposed this petition. The Court in considering this application pointed out that:[163]

> "The State of Illinois has failed to show that it has provided all possible means at its command for the completion of the sewage treatment system as required by the decree as specifically enlarged in 1933 (289 U.S. 395, 710.) No adequate excuse has been presented for the delay. Nor has the State submitted appropriate proof that the conditions complained of constitute a menace to the health of the inhabitants of the complaining communities or that the State is not able to provide suitable measures to remedy or ameliorate the alleged condi-

[163] 309 U.S. 569 (1940).

> tions without an increase in the diversion of water from Lake Michigan in violation of the rights of the complainant States as adjudged by this Court."

Nevertheless the Court appointed a Special Master to make summary inquiry and to report back to the Court. After hundreds of witnesses, including experts, were heard the Special Master filed his report on March 31, 1941 in which he held that "the actual condition of the Illinois Waterway by reason of the introduction of untreated sewage creates in the summer months a nuisance through offensive odors at Joliet and Lockport, but does not present a menace to health. No nuisance conditions were proven to exist along the Waterway at any other points".[164] The Special Master's report was approved by the Court.[165] More than eighteen years ago, in January of 1929, Mr. Chief Justice Taft, speaking for the whole Court, emphatically warned that:

> "The Sanitary District authorities, relying on the argument with reference to the health of its people, have much too long delayed the needed substitution of suitable sewage plants as a means of avoiding the diversion in the future. Therefore they cannot now complain if an immediately heavy burden is placed upon the district because of their attitude and course".[166]

And, in 1930, Mr. Justice Holmes again pointed out that the defendants (the state of Illinois and the Chicago Sanitary District) "are doing a wrong to the complainants, and that they must stop it (the illegal large diversion). They must find a way out at their peril".[167]

Since these warnings were given by the United States Supreme Court the Sanitary District has had ample time to provide the needed sewage disposal plants for complete treatment of all of the sewage of the district. Under the recommendation made by Special Master Charles Evans Hughes and approved by the Supreme Court, all of the sewage disposal plants and appurtenances should and could have been completed by December 31, 1938. No adequate excuse has been presented for the failure to provide the complete sewage treatment system required by the Court's decree of April 21, 1930, as specifically enlarged in 1933.[168] Had the state of Illinois and the Sanitary District complied with the Court's decree, no nuisance conditions would obtain anywhere either in Chicago or along the Illinois Waterway inasmuch as the effluent from a well operated modern sewage disposal plant is clear, odorless and permanently stable and may be

---

[164] Report of Special Master Monte M. Lemann, dated March 31, 1941, p. 110.
[165] 313 U.S. 547 (1941).
[166] 278 U. S. 367, 420-421.
[167] 281 U.S. 179 (1930).
[168] 289 U.S. 395, 710 (1933).

turned into a watercourse (and even a dry run) without causing a nuisance or odors.

Langdon Pearse, an eminent sanitary engineer and chief sanitary engineer for the Chicago Sanitary District, stated before the Rivers and Harbors Committee of the House of Representatives in 1924 that:[169]

> "The biological processes, such as sprinkling filters or activated sludge, when properly operated produce a high-grade effluent, requiring no dilution, in which fish can live. The effluent further will produce no nuisance and can be turned into a water course, even though dry, without fear of consequences."

Several years later, Mr. Pearse in his testimony before Special Master Hughes reaffirmed that his previous statement as to the high quality of the effluent from an activated sludge plant was correct in that fish were living in the effluent of the Sanitary District trickling filters right at the filters. Young carp were living in the effluent, some shiners from Lake Michigan and others.[170]

L. R. Howson, nationally known expert, specializing in sanitary and hydraulic engineering, testified before Special Master Hughes that the effluent of a modern activated sewage disposal plant is "stable, odorless and clear",[171] and that such effluent may be discharged into an open channel without dilution and will remain stable indefinitely. He also testified that about three parts per million of dissolved oxygen are required to maintain a thriving fish life.[172]

George B. Gascoigne, a noted consulting sanitary engineer, testified that the effluent of a modern activated sludge plant is stable, odorless and clear and will remain stable indefinitely.[173]

Darwin W. Townsend, a sanitary engineer of many years experience, also testified that "the effluent of an activated sludge plant is stable, odorless, clear and sparkling. The effluent of an activated sludge plant discharged into an open tank will remain stable indefinitely".[174]

In a pamphlet prepared and distributed by the Sanitary District of Chicago in 1928, it was stated:[175]

> "Final settling tanks is the next step in the activated sludge process. After the process of aeration is completed, the mixture

---

[169] Doc. 184, 73rd Congress, 2nd Sess., p. 76.
[170] Transcript of Testimony, original hearings before Special Master Hughes, pp. 5423-5425.
[171] Transcript of Testimony taken on Re-reference before Special Master Hughes, p. 10667.
[172] Ibid., p. 10664.
[173] Ibid., p. 10697.
[174] Ibid., p. 10720.
[175] Engineering Works for the Sanitary District of Chicago, August, 1928, p. 91. In this pamphlet it was further stated that: "The effluent produced by the activated sludge plant appear somewhat superior at times to that produced by the

or sewage and activated sludge, passes through mechanically cleaned tanks; *the effluent as discharged from these tanks is a clear, odorless liquid * * * non-putrescrible.*"

The Sanitary District also stated that the effluent of the North Side Treatment plant is:

"Almost as clear as drinking water and quite as harmless as it finally leaves the plant through an outlet and into and through an artificial channel which discharges into the Chicago River".[176]

Horace P. Ramey, Assistant Chief Engineer of the Sanitary District, in an interview during a meeting of the Illinois Governor's Committee on February 6, 1947, admitted that no additional diversion is necessary under the District's program for sanitation purposes.[177] Anthony Olis, a trustee of the Chicago Sanitary District and Chairman of Illinois Governor Green's Committee on Diversion, likewise acknowledged in a speech before the Chicago City Club, on March 17, 1947, that no additional diversion is necessary for sanitation purposes.[178]

From the foregoing it is manifest that the effluent from a well operated modern sewage disposal plant is clear, odorless and stable and may be put into a dry run (without any diluting water whatsoever) without harm or fear of consequences and that such effluent will remain stable indefinitely. In other words, no additional diversion is necessary for sanitation purposes. The total amount of water now taken from Lake Michigan at Chicago (1500 cubic feet per second direct diversion, plus 1700 cubic feet per second domestic pumpage) is more than ample to provide nuisance free, wholesome conditions along the Chicago River, the Chicago Drainage Canal, the Des Plaines and Illinois Rivers.

(m) *No Increase in Diversion is Necessary for Navigation Purposes.*

1. *The Illinois Waterway.*

It has frequently been urged during many years that increased diversion is necessary to provide adequate navigation on the Illinois waterway. Only recently (March 17, 1947) Anthony A. Olis, a Trustee of the Sanitary District, in an address before the City Club of Chicago, demanded increased diversion to satisfy the alleged needs of navigation on the Illinois waterway. Olis contended that "the merit

---

sedimentation trickling filter process. It accomplishes from 85 to 95 per cent reduction of the biochemical oxygen demand, 90 to 95 per cent reduction of suspended solids and from 92 to 98 per cent reduction in bacteria."

[176] Page 229, Complainants Exhibit 233, Wisconsin *et al* v. Illinois *et al*, 278 U.S. 367 (1929).

[177] Chicago Tribune, Feb. 7, 1947, early edition.

[178] Chicago Tribune, March 18, 1947.

of claim for increased diversion rests on the vital necessity of the inland waterway, and the location of the Argonne national laboratory for atomic research at Lemont."

General Bixby, former Chief of Engineers, in his testimony before Special Master Hughes as to the requirements for an inland waterway, declared that with a nine foot channel (which still is the official government project depth for the Illinois Waterway) 500 to 1000 cubic feet per second of water will be sufficient to furnish all the lockage water needed for about 60 million tons per year from Lockport. No water is needed during the closed season of navigation. General Bixby stated further that the Panama Canal through the summit level used 989 cubic feet per second for a commerce of 26 million tons in 1926. Lockage on the Panama Canal goes both ways, from the summit to both oceans. The amount required for lockage one way on the Panama Canal is less than 500 cubic feet per second annually. In the Illinois Waterway the lockage runs one way from Lockport to Utica, since the summit level is Lake Michigan.

The accuracy of General Bixby's testimony is borne out by actual experience in operating the Illinois Waterway. The War Department has had no difficulty in maintaining the 9 foot authorized channel from the day the project was opened in the year 1933 to the present time.

In many official government documents the findings and conclusions relative to the amount of water required for purposes of navigation along the Illinois River demonstrate that 1000 cubic feet per second of water is all that is necessary for navigation on the Illinois Waterway.[179]

General Keller testified before Special Master Hughes that 1000 cubic feet per second "would be more than sufficient to accommodate a traffic of 100,000,000 tons annually" on the Illinois Waterway.

On November 9, 1936, General Pillsbury reported that:

> "It is therefore apparent that all necessary steps have been taken to provide for 9-foot navigation from the Great Lakes to the Mississippi River after the direct diversion from Lake Michigan has been reduced on December 31, 1938, to 1500 cubic feet per second. This flow as augmented by the water pumped for domestic purposes will be more than ample for the operation of the waterway to meet the requirements of navigation."

In 1938, the United States District Engineer at Chicago, the Board of Army Engineers, the Chief of Engineers and the Secretary

[179] House Doc. No. 1374, 61st Congress, 3rd Session; House Doc. No. 762, 63rd Congress, 2d Session; Decision of Secretary of War, Henry L. Stimson dated Jan. 8, 1913; Warren Report, dated Aug. 30, 1919; Letter of Brig. Gen. W. H. Bixby, Chief of Engineers, to Secretary of War, dated Feb. 28, 1912.

of War all stated that the authorized diversion of 1500 cubic feet per second plus domestic pumpage was ample to meet the needs of a commercially useful waterway in the Illinois River. The Secretary of War in a letter dated January 17, 1938 to the Chairman of the Rivers and Harbors Committee (which then had before it the so-called Parson's Bill)[180] stated in part:

> "As Congress has directed the prosecution of a project for the improvement of the Illinois River to provide a commercially useful waterway without the need for an increase in the diversion of water from the Great Lakes beyond that ordered by the decree of the Supreme Court, and as this work is now under way, there is no apparent necessity to authorize and direct the Secretary of War to increase this diversion to 5000 cubic feet of water per second."

In the actual operation of the Illinois waterway, the nine foot channel authorized by Congress has at all times been maintained with the 1500 cubic feet of water per second, plus domestic pumpage authorized by the Supreme Court decree of April 21, 1930. The tonnage moved on this waterway has increased yearly until 1945 when the total tonnage reached a high of 7,250,000 tons. In 1945, the total tonnage carried on the Illinois Waterway was 6,590,939 tons. In 1946 the freight moved on the Illinois waterway was about 17½ per cent below the 1945 volume. An estimated 5,437,000 tons were moved in 1946 on this waterway.

2. *The Mississippi River below Alton.*

It has also been contended that increased diversion would be of great assistance to navigation on the Mississippi River from Alton, Illinois to St. Louis, Missouri, particularly in the so-called Chain-of-Rocks section. This claim is made on the theory that increased diversion will give an increased depth of water over the bars during times of low water. The Mississippi River has some peculiar characteristics which are not generally found in any other stream in this country. In times of flood or high water, additional diversion would be of no benefit to navigation but would only increase the hazards of the river and might cause serious injury. In times of low water there is a decrease in current and any obstruction in the river will serve to accumulate a large amount of the waterborne silt which the Mississippi receives from the Missouri River. Navigation on the Mississippi is conducted through a series of pools, separated by bars, and it is the depths over these bars that limits the depth which tows and barges may draw.

---

[180] H.R. 8327, 75th Congress, 3rd Session.

Brigadier General W. H. Bixby, former Chief of Engineers, U.S. Army, testified before Special Master Charles Evans Hughes that increased diversion would not appreciably aid the navigability of the Mississippi River, for the reason that "as the stage of the river rises, the bars also rise, and as these bars furnish the critical points in the periods of low water, there is no addition, by reason of the Lake Michigan increment, to the available depths for navigation over the bars".[181] This view is set forth in reports of the Federal Government.

Major J. B. Cavanaugh in a report to General Bixby, then President of the Lakes-to-Gulf Waterway Board dated August 13, 1913, stated that:

> "In any case the gain in navigable depth (for the Mississippi River) would be insignificant for any permissible diversion."

Major John C. Gotwals, former district engineer at St. Louis, testified before Special Master Hughes that increased diversion would aid navigation on the Mississippi to some extent. Gotwals agreed with General Bixby that the bars would rise in elevation with a rise in river but it was his opinion that the bars would not rise to the same extent as the river. It was Gotwal's belief that the bars would rise about 50 per cent of the added depth obtained.

The United States War Department, which had been studying this problem for years, concluded that the only feasible plan for providing improved navigation facilities in the Chain-of-Rocks section of the Mississippi River is to build a side canal around the Chain-of-Rocks. Any benefit to the Mississippi River from increased diversion is so speculative in times of low water and so detrimental in times of high water that increased diversion is no adequate solution to the problem of improving navigation on the Mississippi River. When the side canal around the Chain-of-Rocks is completed (it is now authorized) the needs of navigation on the Mississippi River will be taken care of in the best possible way. Meanwhile, increased diversion would not alleviate present conditions to any appreciable extent, since "the gain in navigable depth would be insignificant for any permissible diversion."

(n) *The asserted purely local Chicago benefits of diversion in water power and sewage, legally unjustified, are in fact trifling in comparison with the tremendous damages to shipping and riparian property on the Great Lakes-St. Lawrence System.*

The State of Illinois and the Sanitary District have always contended that in adjusting the relative rights of the states involved

---

[181] Report of Special Master Hughes, Nov. 23, 1927, p. 123.

in the Chicago Diversion controversy to interstate or international watercourses, there must be a balancing of the equities of the situation and that a "small incidental disadvantage" to the lower riparian states should not weigh against the immense advantages to the upper riparian states, where the common good requires that all interests should be equitably considered. The United States Supreme Court ruled against this contention in the litigation involving the Great Lakes states.

However, even if this so-called doctrine of "comity between states" were applicable, it is apparent that the injuries and damages sustained by the Great Lakes states and their peoples, through increased diversion, far exceed any possible public benefits that might accrue through an increased flow of Lake Michigan water through the Chicago Drainage Canal.

In other words, eliminating the legal and moral aspects of the controversy, the huge losses to Great Lakes shipping, to docks, wharves, piers, foundations of buildings, and the like, and to riparian owners, which damages would run into millions of dollars, far exceed any possible benefits to commerce on the Illinois Waterway or to local sanitation needs.

Freight moved on the Illinois waterway system in 1946 was about 17½ per cent below the 1945 volume. The decline was attributed largely to the two coal mining strikes in the spring and fall of 1946.

In 1945 the barge lines transported 6,590,939 tons of freight, as final tabulations of the United States Army engineers showed. Approximately 5,437,000 tons have been moved in 1946. The all time record for the system was established in 1944 with approximately 7,250,000 tons.

Operating conditions in 1946 were satisfactory on the whole. The only serious impediment was the closing of a lock at Brandon road, near Joliet, for 10 days through inability to get a repair part, a four foot forging. There were no serious delays from floods or ice.

Although the total was down, coal carried in 1946 on barges was impressive, amounting to approximately 3,500,000 tons. It would take 70,000 50-ton railroad coal cars to handle this. 95 per cent of the coal handled is by the Central Barge Company and the Ohio River Company which estimated that their 1946 coal business was down about 20 per cent.

About 500,000 tons of grain were moved, an increase of about 6 per cent. Petroleum shipments totaling about 554,000 tons showed an increase of 100 per cent over 1945. The increase resulted in part from the demand for more petroleum to offset coal losses. Iron and steel shipments totaled about 20,000 tons, the same as in 1945.

Shipments of approximately 1,500,000 board feet of lumber from Portland, Oregon were brought into Chicago by barge over the Mississippi and Illinois waterway systems late in January. The lumber was moved by steamship through the Panama Canal to New Orleans where it was transshipped to the barges.

During the year 1946 the 3,200 c.f.s. obtained from domestic pumpage and direct diversion was ample to meet all needs of navigation. Additional diversion would be of no help to commerce on the Illinois Waterway since the presently authorized diversion provides all the water needed for lockage, leakage, evaporation and flotation of barges on the Illinois Waterway.

Navigation on the Great Lakes is carried on over 95,000 square miles of water highway, directly servicing eight Great Lakes states and indirectly servicing many more, as compared with the limited service rendered by the Illinois Waterway. Power generated at Niagara is worth more than four times the power developed at Lockport for the same amount of water. Hence, under the very doctrine advanced repeatedly by proponents of increased diversion, no justification can be shown for granting the perennial requests for a large diversion of Lake Michigan water at Chicago.

(o) *Metering of Chicago Domestic Water Supply.*

To a very large extent the domestic water consumption in the City of Chicago is not metered. That is to say, about three-fourths of the residential and industrial users of water in the City of Chicago pay for the same not on the basis of the amount consumed but in most cases at a flat rate, regardless of the amount consumed. In the City of Chicago the per capita consumption is about 214 per cent above the average of nineteen other large American cities, as disclosed by the testimony in the litigation between the Lake States and Illinois and the Chicago Sanitary District in 1940-1941.[182] Of the 412,228 water services in 1940 in Chicago only 115,025 were metered. Universal metering would reduce the amount of water consumed. This has been the experience in most of the American cities where the water services were meterd.

Metering of the water supply of the City of Chicago has been advocated for a great many years. A report was made in 1915 strongly recommending meters for Chicago. Various Governmental agencies have from time to time urged the metering of the Chicago water supply. The permit of Secretary of War Weeks, dated March 3, 1925 (which authorized the diversion of an annual average of 8500 c.f.s. in addition to domestic pumpage) contained a condition that the City of Chicago meter at least 90 per cent of its water services at the

[182] Report of Special Master Lemann, March 31, 1941, p. 102.

rate of 10 per cent per year. Had this condition been complied with, universal metering of the Chicago water supply would have been completed by 1935.

The P.W.A. Board of Engineers, in its report of April 30, 1934, stated that the "great and unreasonable waste of water works system" had "added millions of dollars to the cost of sewage and sewage disposal work" and recommended that every effort be made to reduce such waste. This report further recommended that "the capacity of future treatment plants be predicated upon the reasonable use of water." In August 1938, an offer of a grant of money from the P.W.A. in connection with the construction of the Southside water filtration plant contained a condition that the city must satisfy the P.W.A. Administrator that it would install approximately 115,260 meters. In the spring of 1939 Chicago was permitted to defer the installation of meters until a date later than that originally specified.

Universal metering of the Chicago domestic water supply would reduce the amount of water consumed and this in turn would reduce the volume of sewage, which would permit a longer period of detention in the aeration tanks and increase the amount of sewage which could be given complete treatment. A reduction in the domestic pumpage (the use of domestic water supply in Chicago) would result in a substantial gain in the amount of sewage which could be completely treated. A cut in the domestic sewage flow would also make available more capacity in the sewage treatment plants for storm water in the intercepting sewers and would extend the useful life of the sewage disposal plants.

Today, the domestic water supply in the south side of the City of Chicago is given preliminary treatment in the new water filtration plant. This plant will not be finished for complete treatment of the water supply until the fall of 1947. Today, the Chicago water supply is safe, although it does not meet fully the Federal standards for ideal water as to color, taste, and turbidity. Sanitary and water experts recognize that all modern up-to-the-minute cities should have both complete sewage treatment and complete treatment of the domestic water supply by means of water filtration plants.

(p) *Management and Operation of the Sanitary District of Chicago.*

The statistics taken from the records of the Sanitary District of Chicago discloses that during the year 1946, the composite average of B. O. D. removal of all the sewage of the Sanitary District was only 68.2 per cent. In 1945, the composite average of B. O. D. removal was 65 per cent, while in 1940 it was about 60 per cent and in 1930 it was 10 per cent. These results are far below the standard of 85

to 90 per cent or more reduction in B. O. D. required by the Special Master and the United States Supreme Court to be obtained by December 31, 1938, when the program for the complete treatment of all the sewage of the Sanitary District was to be completed and below the results obtainable from a well operated modern sewage disposal plant. Many of the heads of Departments and others holding top positions in the Sanitary District are eminent and recognized authorities in their respective fields. The question then arises as to why the District hasn't been able to obtain better results in its sewage treatment program. Politics may be the answer. In a recent editorial one Chicago paper comments as follows:[183]

> "The four Republican trustees of the sanitary district are demanding an explanation of scandalous mismanagement of the district's 25 million dollar Stickney sewage treatment plant, which was opened just before the war.
>
> "The charges are that the sludge drying process is operating at only one-fourth capacity and that political payrollers have deliberately sabotaged expensive equipment, apparently to get out of work of operating it. The payrollers, it is charged, are defiant of all discipline, spend their time gambling, and threaten with violence technical supervisors who attempt to have the plant operated properly. Just how long these conditions have existed is not certain, but they obviously are not of recent origin, because the level of production of the plant has been declining since 1941."

And, in a news item, the same Chicago paper reported that the Sanitary District Board was faced with voting on four issues for reform of the management and operation of the District's program.[184]

> "This proposal calls for a new chief engineer, a new chief attorney, broader powers for the new appointees, and minority representation on the civil service board — the latter the breeding ground of most of the evils uncovered by the Republicans.
>
> " 'The minor victories so far will mean virtually nothing unless there is a thorough shakeup,' Republican Trustee Anthony A. Olis said yesterday. 'We Republicans agree such a shakeup will help raise the efficiency of the sanitary district plants and keep the system from slipping back into the mess in which we found it.' "
>
> Republican Trustee William S. Nordburg, who was the first to suggest the reforms, said private conversations with several of the Democratic trustees have convinced him they are eager to correct the conditions that have been exposed.
>
> " 'Our four votes are futile unless the Democrats are sincere in their expressed desire to do what is right,' Nordburg

[183] Chicago Daily Tribune, Feb. 20, 1947.
[184] Chicago Daily Tribune, April 21, 1947.

said. 'If they meant what they said, we can get these reforms under way and put the district on a sensible footing.'

"But win, lose, or draw in the conference tomorrow, the Republican minority has performed a valuable service to the sanitary district and the taxpayers, according to the top engineers of the district.

"These professional men, whose devotion to their jobs has kept the all-important agency from breaking down completely, say that a new attitude is apparent on the part of the politically sponsored 'temporary' employees who infest more than half the district's 1,900 jobs.

" 'The word has gone out that a powerful sponsor isn't enough any more,' one of the engineers said. 'The recent firing of 29 unfit workers, despite their sponsors, proved that. The civil service examinations coming up will spell good-by to still more. And those that are left are doing some work.'

"The minority fight has been an uphill battle.

"It came into the open on Feb. 19 when Trustees Olis and Nordburg, along with Republican Trustees Michael J. Rudnik and J. B. Martin, questioned some of the engineers and found that inefficiency, carelessness, thievery, and loafing were rife in the southwest treatment works in Stickney."

The same paper said editorially:[185]

"There is nothing unique in the current scandal in the sanitary district. It has been almost continuously notorious for graft, pay roll padding, and general inefficiency for two decades or more.

"Four different department heads, the chief clerk, chief engineer, attorney, and purchasing agent, run their activities about as they choose, responsible only to the commisioners. There are too many of the latter and they have given little attention to actual operations. Furthermore, the district has had more construction work than any other local government and construction is always a bonanza for grafters.

"As a partial remedy for these evils, the Civic federation has recommended that the legislature give the district a business-like administrative organization, headed by a general superintendent to whom all other employes would be responsible. The federation would also reduce the number of trustees to five, which is more than sufficient to form its policies. An independent civil service commission would be provided, in the hope that this would remedy the conscienceless padding of pay rolls with incompetent, politically sponsored, temporary appointees.

"These are all sound measures and the legislature should adopt them. The full effect of any legislative reforms cannot be felt for nearly two years, however, and meanwhile some effort should be made to clean up the existing mess."

---

185 Chicago Daily Tribune, Aprl 21, 1947.

One Chicago newspaper has even gone so far as to argue that the Sanitary District Board of Trustees should be abolished. In an editorial it was suggested as follows:[186]

ABOLISH THE SANITARY BOARD

The sanitary district of Chicago was organized nearly 60 years ago. At the time it was a good idea to have a separate municipal corporation devoting its sole energy to turning the Chicago river around and providing a safe outlet for the sewage of a great city. Later, the sanitary channel was made into an important inland waterway. Still more recently, the Supreme court decree in the Lake Michigan diversion case required the city to treat its sewage. The sewage treatment program is completed, or virtually so.

From now on, there is little real work for the sanitary trustees to do, certainly none that could not be performed well by some other local government. The district should be abolished as an independent government unit and its swollen staff pruned down.

There may be certain legal obstacles to this. There are bonds outstanding which must be redeemed thru taxation. The legal form of the district and some sort of appointive board may have to be retained to vote these tax levies and handle purely fiscal operations. That would not mean that the physical operations could not be divorced and placed in other hands.

There are minor difficulties in this direction, also. Operation of the sanitary district's physical facilities would best fall under the city water or sewer department, or perhaps a unification of the two. However, the district collects taxes from and renders services to most of Cook county outside of Chicago, and if it were placed under city management suburban residents would be taxed without representation and might not get the service to which they are entitled.

The county government, on the other hand, represents all the citizens of the county but its organization is archaic and its operation of existing county facilities is about as could be imagined — no recommendation for giving it additional functions.

These__, however, are relatively minor problems. As a separate government, the sanitary district is costing the Chicago area more than it is worth. The sooner we are rid of it, the better off we will be.

Another news item discloses the high cost of operating the Sanitary District is due, in part, to high construction costs where in one

[186] Chicago Daily Tribune, November 21, 1946.

instance the construction costs skyrocketed 352 per cent on one project.[187]

The Civic Federation of Chicago demanded complete revision of the "awkward" governmental setup of the Chicago Sanitary District and said such streamlining would help eliminate the periodical scandals that sweep the district. Harland C. Stockwell, executive secretary of the Civic Federation, pointed out that the Sanitary District stumbles wildly among the pitfalls that await even the most efficient governmental unit. Stockwell said that "from time to time the district falls flat on its face — always at the taxpayers' expense. Surgical action by the state legislature is sorely needed".[188]

Exhaustive study of the sanitary district structure over a period of years has convinced the Civic Federation that the following changes must be made:

1. Provide for the creation of the position of general superintendent and define the duties of the clerk, chief engineer, attorney, and purchasing agent.
2. Reduce the number of trustees from nine to five.
3. Change the politically ridden civil service administration in the district.

Stockwell explained that under the present act hurriedly passed by the legislature in 1889, the administrative authority rests with the nine trustees. The clerk, chief engineer, attorney, and purchasing agent, all mentioned in the act, run their respective departments and each is responsible only to the trustees.

The creation of a general superintendent would center executive authority in that position, and he alone would be responsible for the administration of the district, answerable to the trustees much as the president of a corporation is answerable to his board of directors.

The result of many months of investigations and hearings and wide spread local clamoring for reforms was the creation of the

---

[187] Chicago Daily Tribune, Feb. 24, 1947:

"Further scrutiny of sanitary district contracts let during the exclusively Democratic regime yesterday disclosed to the four new Republican trustees that construction costs apparently skyrocketed 352 per cent on one project.

"This was the $5,421,890 Battery C project at the southwest treatment works, in Stickney, said Trustee Anthony A. Olis, spokesman for the Republicans, including Michael J. Rudnick, J. B. Martin, and William Nordburg.

"Batteries A and B, each identical to the new Battery C, were built by the Herlihy Mid-Continent Construction company in 1935-39 for a total cost of $3,080, 643, or $1,540,321 each.

"'So Battery C is costing more than each of the first two', Olis said. 'I hadn't realized construction costs were up that much. It must have diamond inlays.'

"The batteries include aeration and settling tanks used in sewage disposal. Previous investigation of the Battery C contract had disclosed the board's maneuvers to award the contract to the Malcolm J. Boyle company, 2480 Elston ave., on June 6, 1946, with an escalator clause. * * *"

[188] Chicago Daily Tribune, April 17, 1947.

position of General Superintendent who is alone responsible for the administration of the District and is answerable only to the trustees. William A. Dundas, an able engineer who has been with the District for many years, was chosen to fill the position of General Superintendent. With the dismissal of many inefficient employees and the appointment of a capable and independent General Superintendent, many persons feel that the efficiency of the District will be increased and that the confusion and periodic scandals of the past will be eliminated.

(q) *Suggestion for a Permanent Solution of the Chicago Diversion Controversy.*

A committee appointed by Governor Green of Illinois is studying the desirability of federal legislation to increase the diversion of water from Lake Michigan through the Chicago Drainage Canal.[189] Thomas B. Casey, chief state waterway engineer, one of the committee members, at a meeting on February 6, 1947, said:

> "As I see it, this committee's problem is to get an adequate amount of water into the Illinois waterway, from Chicago down to the river's mouth at Grafton. And I mean enough for all purposes: navigation, health and sanitation, recreation, community use. But the problem must be studied so that, we're asking for proper diversion, which would be an aid to agriculture, rather than a hindrance".[190]

Horace P. Ramey, assistant chief engineer of the Sanitary District who was called to the same meeting, said that the Sanitary District did not require additional diversion as part of the District's sewage disposal program. Ramey emphasized that the District was giving some treatment to 99 per cent of the sewage originating in the District and was giving 65 per cent over-all treatment, compared with 10 per cent treatment in 1930 and 48 per cent treatment in 1939. Ramey said that construction under way will raise the over-all treatment figure to a maximum 90 per cent in three years. Anthony A. Olis, member of the Sanitary District Board of Trustees and Chairman of the Governor's Lake Diversion Committee, speaking before a meeting of the City Club of Chicago on March 17, 1947, said that increased lake diversion is necessary because of atomic power and the importance of the Illinois Waterway rather than because of sewage disposal. Olis stated that "Sewage disposal around which most of the opposition (to increased lake diversion) had previously centered, is not intimately involved in the present fight for additional diversion. The claim for increased diversion rests on the vital necessity

[189] Chicago Daily Tribune, Feb. 7, 1947.
[190] Chicago Daily Tribune, Feb. 7, 1947.

of the inland waterway, and the location of the Argonne national laboratory for atomic research at Lemont. This laboratory will use vasts amounts of water as a cooling agent."

Among the purposes mentioned by state and sanitary district officials, as requiring increased diversion of Lake Michigan water, are navigation, health and sanitation, recreation, community use, agriculture and atomic power.

The fact is no one of the above purposes requires increased lake diversion. Navigation on the Illinois Waterway is carried on without delay or hindrance on the 9 foot channel provided by the Federal Government. Health and sanitation require no increase in diversion, since Chicago is one of the healthiest cities in the world, with a safe, adequate water supply. Recreation and community use, such as boating, bathing and fishing, will not become available with increased diversion, since the introduction of a strong current in the Illinois Waterway would make boating and swimming dangerous. Fish life will not be restored on the Illinois Waterway by increased lake diversion. Recreation and fishing will return only when the polluted conditions existing in the Illinois Waterway are cleaned up and this can be done only at the source of the pollution. The Chicago Drainage Canal, and the Des Plaines and Illinois Rivers should not be allowed to remain open sewers. These unsanitary and unsightly conditions have existed since the opening of the Chicago Drainage Canal. The contamination of this once beautiful waterway, by the introduction of untreated sewage has so aroused the residents of the lower Illinois Valley that they are up in arms over this condition. The only sure remedy for this situation is complete treatment of the sewage of the Chicago and adjoining areas. The restoration of these contaminated and polluted waterways can be brought about by preventing untreated or partially treated sewage from being dumped in such waterways. This means that complete treatment of all of the sewage of the Sanitary District on a 90 to 95 per cent basis, as now exists at Milwaukee and other lake cities, must be brought about without delay. The continuation of the practice of dumping untreated or partially treated sewage in the Illinois Waterway would only result in perpetuating the unsightly, contaminated conditions in that waterway and no increase in diversion would clear up the waterway under such conditions. At one time the Illinois River was second in fish catch only to the Columbia River where the fish are in fact the product of the sea. At one time more than 22,000,000 pounds of fish were taken from the Illinois River.[191] When the Illinois Waterway is restored to its pristine purity fish life will again abound in

[191] Cooley, Lake Diversion at Chicago (1913), p. 188.

such stream and the people will again enjoy this healthful and exciting recreation.

The claim that increased diversion of lake water is needed for the development of atomic power is one just recently advanced, and illustrates how the proponents of increased diversion will grasp at any straw to obtain a large diversion of lake water. Neither the state of Illinois nor the Chicago Sanitary District is in any way concerned with the development of atomic power in the Argonne Laboratory at Lemont. The Federal Atomic Control Commission, headed by David Lilienthal, has complete charge of this subject. To date, no suggestion has been made by that Commission that increased diversion is necessary for the development of atomic energy. If and when such a suggestion is made, it will be time enough to evaluate such a request in the light of such facts as are available.

The purposes advanced by State and Sanitary District officials are not the real motives for increased diversion. The fact is that the real motive for increased diversion is not generally mentioned. Increased diversion is desired because of the additional income to be derived from the development of hydro-electric power at Lockport, Illinois, where the Sanitary District maintains a power plant, and the decrease in expenses of operation made possible by diluting more untreated and partially treated sewage with additional lake water. The additional electricity which could be developed by a diversion of 10,000 c.f.s. is worth at least $1,500 a day to the Sanitary District, or $550,000 a year.[192]

As former Secretary of War Stimson noted as long ago as January 8, 1913, in denying a then pending application of the Sanitary District to withdraw 10,000 c.f.s. of lake water:[192a]

> "It is manifest that so long as the city (of Chicago) is permitted to increase the amount of water which it may take from the Lakes, there will be a very strong temptation placed upon it to postpone a more scientific and possibly more expensive method of disposing of its sewage. This is particularly true in view of the fact that by so doing it may still further diminish its expenses by using the amount of water diverted from the Lakes for water power at Lockport * * *."

Special Master Lemann pointed out in 1941 that:

> "The record indicates that the Sanitary District has been influenced, not so much by the desire to make speed, as by the purpose ultimately to complete an efficient system at as little expense as possible to its taxpayers. These are praiseworthy motives when considered from the standpoint of the District alone, but they may not place emphasis upon expedition to which

[192] Report of Special Master Lemann, March 31, 1941, pp. 82 and 91.

[195] This opinion of Secretary Stimson appears in the report of Special Master Hughes on the original reference, Nov. 23, 1927, p. 65.

> the legitimate protection of the interests of the opposing states entitles them. Another conflict in interest arises from the fact that the taxpayers of the Sanitary District do not appear to have suffered from any nuisance conditions due to delay in completing sewage treatments; the complaints come only from those residing near the Canal in Joliet and Lockport, who are not taxpayers of the District. The record contains numerous references by representatives of the District to the importance of saving the taxpayers' money as a controlling consideration".[193]

Special Master Charles Evans Hughes, in his report on reference, commented that:

> "Much time can be saved or lost in large building opertaions according to the attitude which is taken as to the importance of early completion. In the present case, the Court has already laid down the requirement that the work shall proceed 'with all reasonable expedition'." [194]

The Lake States and port cities will never agree to the diversion of any additional water from Lake Michigan above the amount of 1,500 c.f.s. fixed by the decree of the Supreme Court dated April 21, 1930. Any proposal for increased diversion, whether made by petition to the United States Supreme Court or by a bill in Congress, will be vigorously opposed by the Attorneys General of the opposing Lake States. Hence, the only basis for a permanent soltuion to the Chicago Water Diversion Controversy involves the early completion of the sewage treatment plants, auxiliary works and sewers so as to provide complete treatment for all of the sewage of the District and the complete understanding and agreement by Chicago interests that no more requests for increased diversion of water from the Great Lakes system will be made in the future. The Lake States have too much at stake ever to agree to increased diversion of any amount of lake water. The mere dilution of Chicago's sewage will never be a satisfactory substitute for the proper treatment of sewage according to the latest scientific principles. The costs of complete treatment are high but it is possible to recover large sums of money, as well as vast wealth in organic fertilizers otherwise irreplaceable, by a complete, modern well operated sewage treatment system. All well governed modern cities should provide both complete treatment of sewage, as well as a filtration system for the cities' water supply. Hence, it is repeated, the only practical way to end the annoyance to the Lake States and port cities occasioned by Chicago's perennial demands for increased diversion is to complete the sewage disposal plants. When this task is completed it will also end the nuisance conditions in the Illinois River which distress the lower Illinois River residents so

[193] Report of Special Master Lemann, March 31, 1941, pp. 107-108.
[194] Report of Special Master Hughes (Dec. 17, 1929), p. 69.

much. When Illinois and the Chicago Sanitary District do what they are required to do by the United States Supreme Court (and should have done by December 31, 1938) the long drawn out Chicago Diversion Controversy will come to an end.

(r) *Conclusion.*

The diversion of water from the Great Lakes-St. Lawrence watershed at Chicago is fixed at 1,500 c.f.s. by the decree of the United States Supreme Court.[195] No argument can be made for any change in its amount for reasons of local sanitation. The final decision on this phase of the subject was made when the Supreme Court of the United States decided (opinion January 14, 1929; opinion April 14, 1930; decree April 21, 1930)[196] that the diversion of water for diluting sewage was illegal. The opinion of April 14, 1930 states: "All action of the parties and the Court in this case will be subject, of course, to any order that Congress may make in pursuance of its constitutional powers and any modification that necessity may show should be made by this Court".[197]

No necessity could be demonstrated to the Court by the State of Illinois in 1940, when the overall purification of the sewage of the Chicago area amounted to approximately 60 per cent, and when the conditions in the Illinois Waterway at Joliet were the subject of considerable complaint. No substantial additions have been made to the sewage treatment plants and equipment since 1941. The overall purification of sewage in the years 1941-1946 has not improved very much. Some nuisance conditions still prevail in parts of the Illinois Waterway but any such conditions in that Waterway should be entirely alleviated when the sewage purification has reached the ultimate 90 or more per cent. Conditions in the future in the Illinois Waterway could not be any worse than those that have prevailed during the past six years. It is therefore not to be expected that any necessity will be or could be shown on the basis of any suggested health menace to the people residing along the Illinois Waterway or in the Chicago area. Chicago's water is safe as determined by the United States Public Health Service.[198] While such water does not always measure up to ideal conditions as to turbidity, color and taste, it is absolutely safe. The color, taste and turbidity can be improved only through filtration but not through increased diversion. Diversion is not a cure-all, although many people in the Chicago area profess to believe that it is.

---

[195] 281 U.S. 696 (1930).
[196] 278 U.S. 367 (1929); 281 U.S. 179 (1930); 281 U.S. 696 (1930).
[197] 281 U.S. 179 (1930).
[198] See Chicago Newspapers, May 2 and 3, 1947.

Congress on July 3, 1930 authorized that the diversion specified by the Supreme Court April 21, 1930 (1,500 c.f.s. in the interests of navigation in the Chicago River as a part of the Port of Chicago) be authorized for the navigation of the Illinois Waterway. Lake States' representatives claim that, in doing this, Congress has taken final action. This claim may be debatable, since Congress, in the same section of the same act, provided: That as soon as practicable after the completion of the Illinois Waterway, the Secretary of War should cause a study of the amount of water required to meet the needs of a commercially useful waterway, and report on or before January 31, 1938 to the end that Congress might take such action as it might deem advisable.

The Illinois Waterway was officially opened June 22, 1933. The report of the District Engineer was filed September 26, 1933 and it was reviewed by the Division Engineer October 19, 1933, and by the Board of Engineers for Rivers and Harbors November 13, 1933. The report of the Chief of Engineers was filed December 6, 1933.[199] In this report the conclusion was reached that the 1,500 c.f.s., diversion of water at Chicago, plus domestic pumpage (now averaging 1,700 c.f.s.), was adequate for the direct needs of the Illinois Waterway (Lockport to Utica), as well as for the lower Illinois River, in which complete canalization was recommended. The Chief of Engineers made a slight reservation in his report: that after the complete treatment of the sewage of the Chicago area, if the 1,500 c.f.s. diversion should prove inadequate, the remedy might be afforded by a moderate and reasonable draft of water from Lake Michigan. Congress, on August 30, 1935, adopted the recommendation in House Document 184 and the Illinois River improvement has long since been completed. Since the waterway has operated 1940-1946 under conditions as bad from a sanitary standpoint as probably ever can prevail in the future, it is extremely doubtful that any of the army engineers will ever seek recourse to the reservation made in the 1933 report. No other interests have any supportable claim.

Undoubtedly, Mississippi Valley interests will continue to resist any attempt to remove this question from the jurisdiction of Congress. There is always the possibility that a temporary increase in diversion of water from Lake Michigan may be asked on the basis of a claimed emergency to aid the Lakes to Gulf Waterway. It is highly improbable that the Supreme Court will ever authorize any increase in the diversion at Chicago to the detriment of navigation on the Great Lakes. Some persons claim that Canada is foreclosed, by the Boundary Waters Treaty of 1910, from any valid objection to increased

[199] House Document 184, 73rd Congress, 2d Session.

diversion at Chicago, even up to 10,000 c.f.s. This claim is not a valid one since Canada has never recognized the validity of any diversion at Chicago. The Boundary Waters Treaty of 1909 furnishes no valid basis for increased diversion.

A permanent settlement of the Chicago Water Diversion Controversy must begin with a recognition by Chicago and other interests that the United States Supreme Court made a final adjudication of the respective rights of the various States and other interests when it fixed the Chicago diversion at 1,500 cubic feet per second plus domestic pumpage. Any future attempt to increase the diversion at Chicago will be strenuously resisted by the Lake States, the port cities and the lake shipping interests.

It is doubtful that the Illinois or Chicago or Mississippi Valley interests can never persuade either Congress or the Supreme Court that additional diversion of water through the Chicago Drainage Canal is necessary or desirable for any purposes.

INDEX

PAGE

PART ONE: HISTORY AND PRESENT STATUS OF THE CHICAGO WATER DIVERSION CONTROVERSY ---------- 149

(a) The Chicago Water Diversion Controversy dates back to early Chicago ---------- 149

(b) Disposition of the sewage of the Chicago area was the main reason for the construction of the present Chicago Drainage Canal ---------- 152

(c) Water power profits became a dominant motive for a large diversion on the part of Illinois and the Sanitary District of Chicago ---------- 154

(d) History and present status of the litigation involving the Great Lake States over the diversion of waters from Lake Michigan ---------- 161

(e) The fight in Congress and before Federal officers for increased diversion at Chicago-- 171

(f) Recent efforts to obtain increased diversion at Chicago-- 175

PART TWO: LEGAL PROBLEMS INVOLVED IN THE CHICAGO WATER DIVERSION CONTROVERSY --- 228

(a) In general ---------- 228

(b) The jurisdiction of the United States Supreme Court to entertain the original suits brought by the Great Lakes States ---------- 229

(c) The legal interest of the intervening Mississippi River States in the Chicago Diversion Controversy ---------- 235

(d) The right of Illinois to abstract huge quantities of water from the Great Lakes system without the consent of the United States ---------- 236

(e) Whether Congress has given specific authority for the Chicago diversion ---------- 240

(f) Whether the Secretary of War had authority under the Federal Act of March 3, 1899 to regulate the Chicago diversion ---------- 241

PAGE

(g) The Permit issued by the Secretary of War dated March 3, 1925 as authority for the maintenance of the Chicago diversion ---------- 244

(h) The Boundary Waters Treaty of January 11, 1909 (ratified in 1910) as authority for the Chicago Diversion ---------- 247

(i) Other Constitutional questions involved in the Chicago Water Diversion litigation -- 254

1. Whether the diversion constitutes a preference to the ports of Illinois over those of the Great Lakes States in violation of Art. I, Section 9, Clause 6 of the United States Constitution ---- 254

2. Whether the diversion constitutes a taking of property of the complainant states in violation of the Fifth and Fourteenth Amendments to the United States Constitution -------- 257

3. The Chicago Diversion as a violation of the Ordinance of 1787, which forbids the obstruction or impairment of the navigable waters leading into the Mississippi and the St. Lawrence, and the carrying places between the same ---------- 260

(j) Power of Congress to authorize the abstraction of the waters of the Great Lakes to another watershed ---------- 260

(k) Discussion of cases sometimes cited as establishing the power of Congress to authorize the abstraction of waters from one watershed to another 264

(l) Comments on legal questions raised in the Chicago Water Diversion litigation ---------- 271

PART THREE: WHAT OF THE FUTURE?

(I) In General ---------- 28

(II) Physical Details concerning the Great Lakes—St. Lawrence System, the Illinois Waterway and Diversion from Lake Michigan ---------- 28

INDEX Continued

PAGE

(a) General description of the Great Lakes-St. Lawrence systems, the Chicago Drainage Canal, the Illinois Waterway and adjacent areas ---------- 28

(b) Description of the Illinois Waterway, the Chicago Drainage Canal and the Calumet River---------- 31

(c) The changes produced by the Chicago Diversion and the damages sustained by the Lake States because of such diversion ---------- 33

1. Damage to docks and wharves ---------- 35
2. Dredging operations ------ 35
3. Reducing vessels' loadings- 36
4. Damage to Great Lakes commerce ---------- 36
5. Damage to riparian owners and resort property---- 37

(d) Description of the Sewage Disposal Plants and Auxiliary Works Maintained by the Sanitary District of Chicago- 38

(e) The effect of the Chicago Diversion on the levels of the Great Lakes ---------- 45

(f) Fluctuations in Lake levels-- 48

(g) Mean levels ---------- 49

(h) Effect of diversions on the levels of the Great Lakes---- 50

(i) The Chicago diversion------- 51

(j) The proposal that compensating or regulating works be installed to compensate for the artificial lowering of the Great Lakes caused by the Chicago Diversion is not feasible ----- 52

PAGE

(k) There is no Justification for any Increase in the Diversion at Chicago ---------- 54

1. The original dilution system of the Sanitary District of Chicago is no longer a part of the District's program for the disposition of the sewage of the Chicago metropolitan area ------- 54
2. Diversion and flow through the Chicago Drainage Canal 57
3. Budgeting of water by the Sanitary District --------- 58

(l) No diversion above the 1500 c.f.s. approved by the Supreme Court is legally justified and no diversion can be factually justified ---------- 59

(m) No increase in diversion is necessary for navigation purposes ---------- 62

1. The Illinois Waterway ---- 62
2. The Mississippi River below Alton ---------- 64

(n) The asserted purely local Chicago benefits of diversion in water power and sewage, legally unjustified, are in fact trifling in comparison with the tremendous damages to shipping and riparian property on the Great Lakes-St. Lawrence System---------- 65

(o) Metering of Chicago domestic water supply ---------- 67

(p) Management and operation of the Sanitary District of Chicago ---------- 68

(q) Suggestion for a permanent solution of the Chicago Diversion Controversy ---------- 73

(r) Conclusion ---------- 77

7200-S15
PB-31
C
BT

PERMA-BOUND®
PAT. NO. 3,161,423

UNIVERSITY OF ILLINOIS-URBANA
627.13N224C C001
THE CHICAGO WATER DIVERSION CONTROVERSY
3 0112 025314052